

THE IRON AGE

A Review of the Hardware, Iron and Steel Trades.

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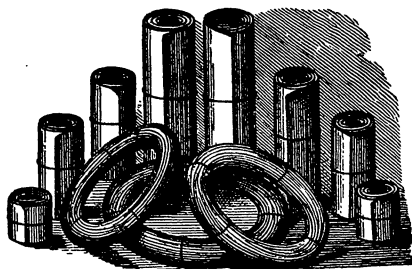
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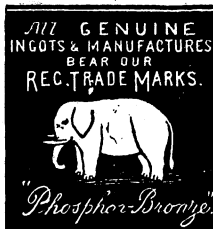
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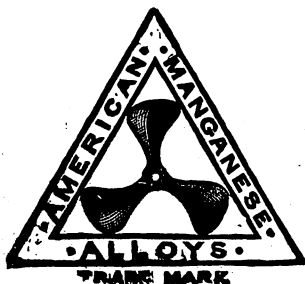
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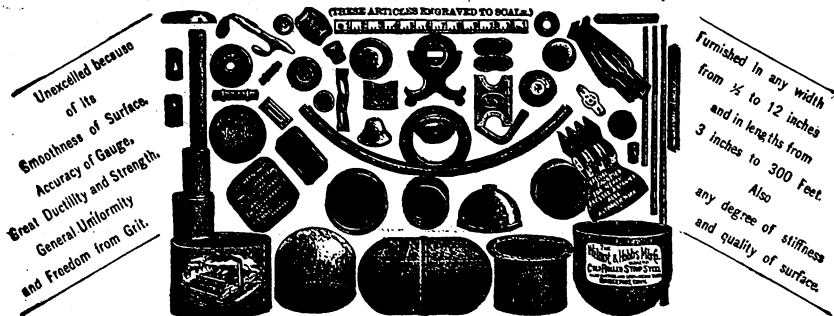
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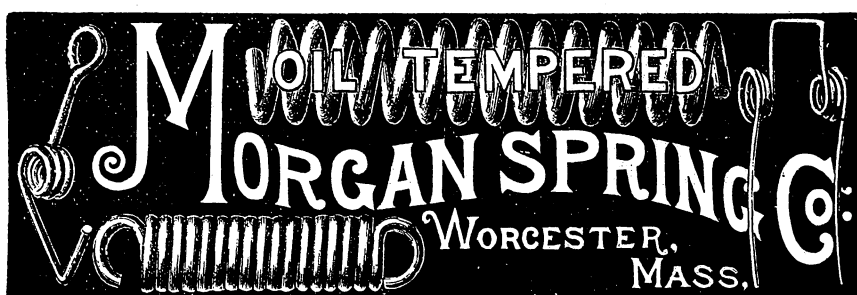
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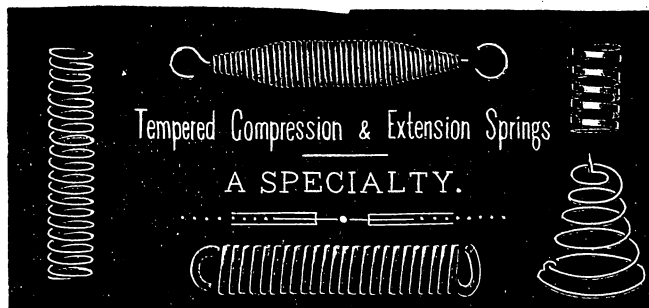


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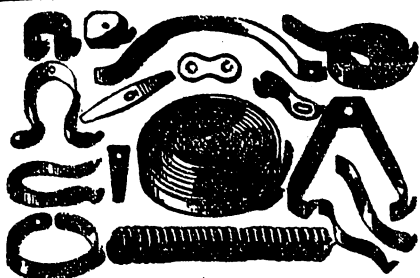
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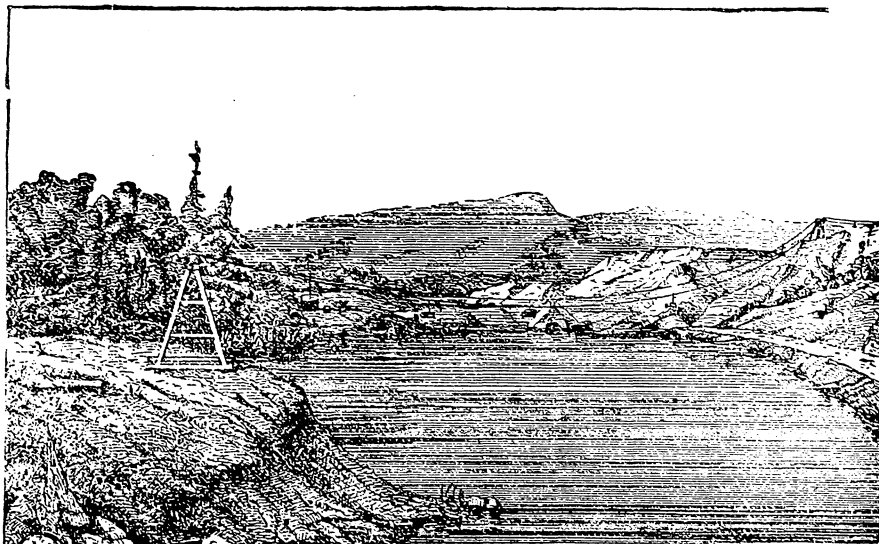
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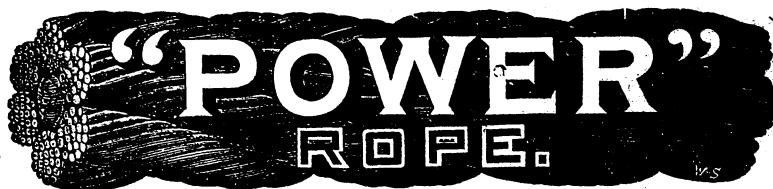
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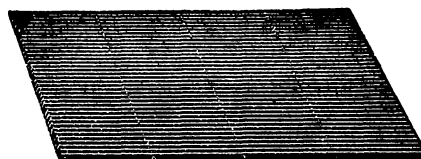
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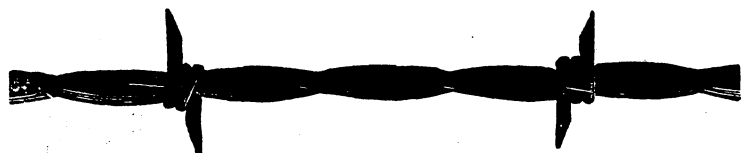
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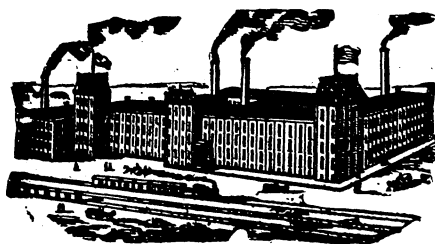
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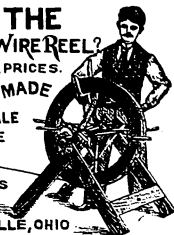
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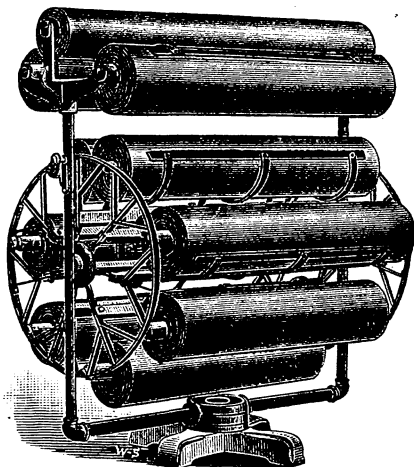
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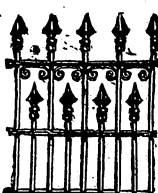
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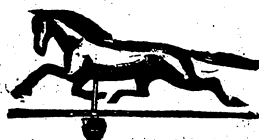


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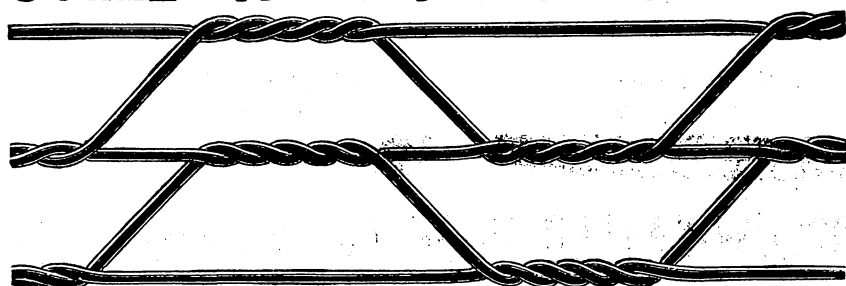
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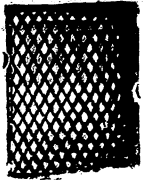


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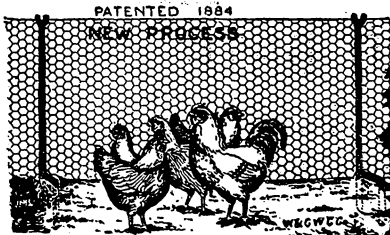
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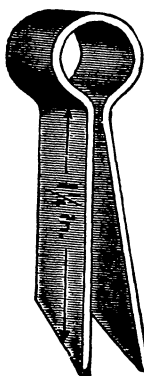


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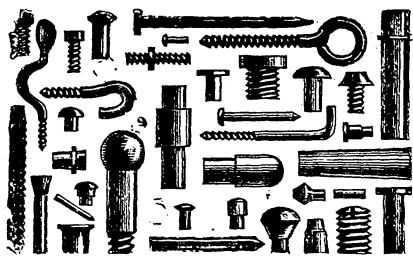
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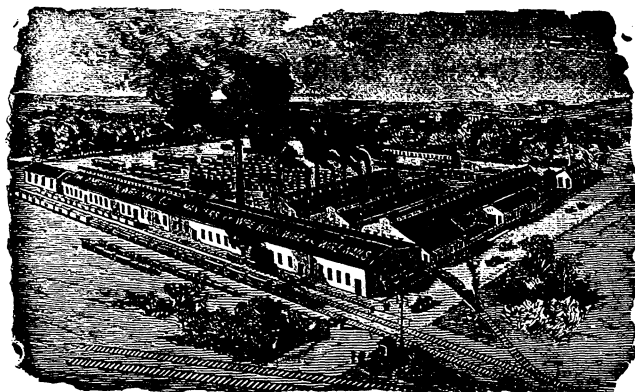
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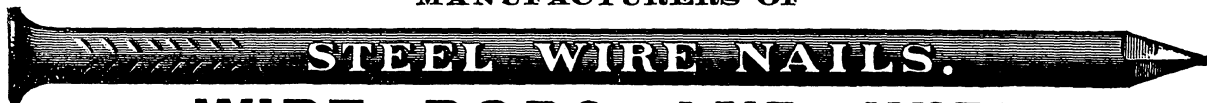
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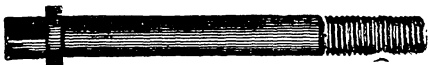
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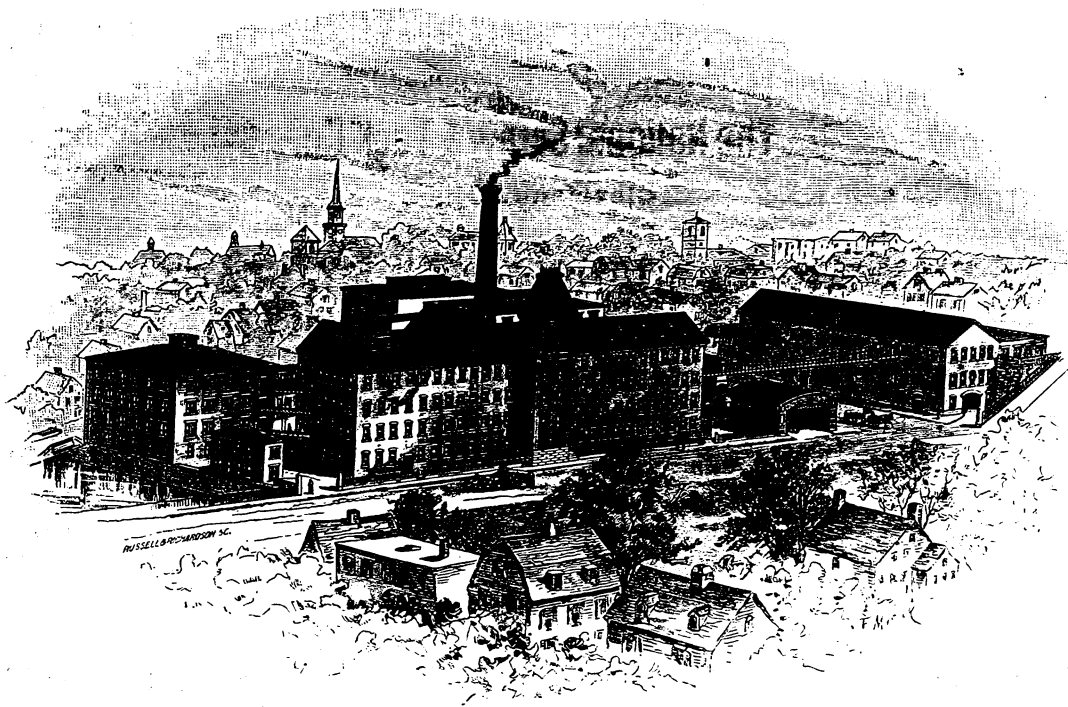
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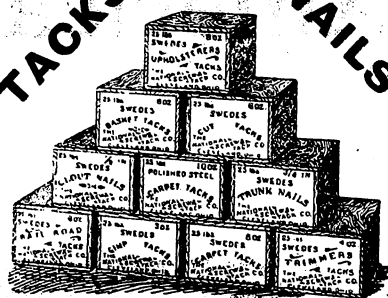
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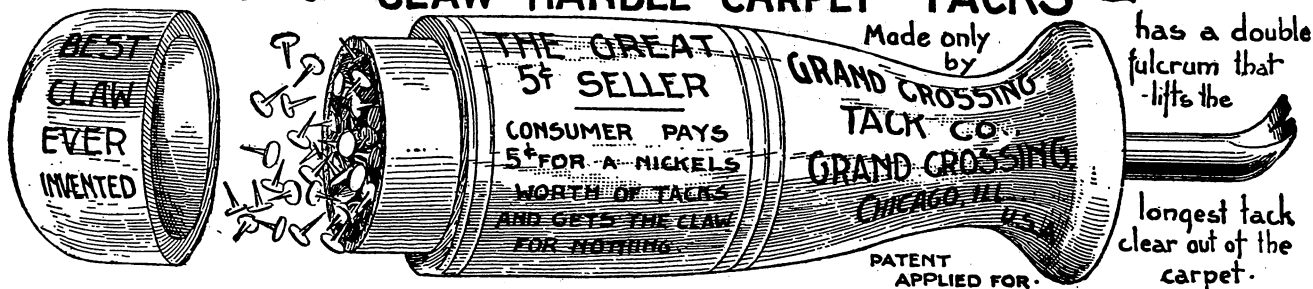
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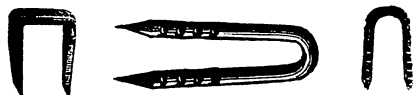
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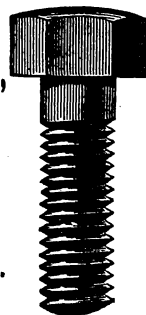
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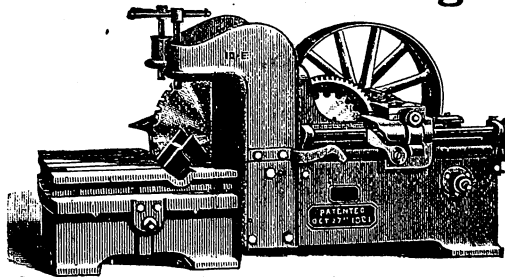
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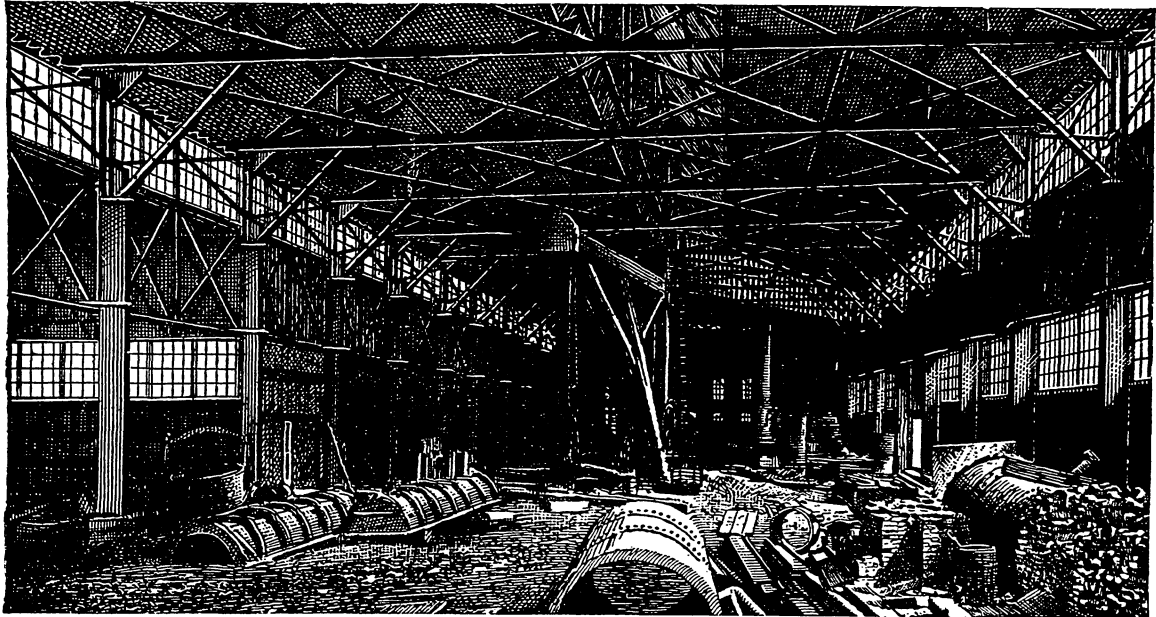
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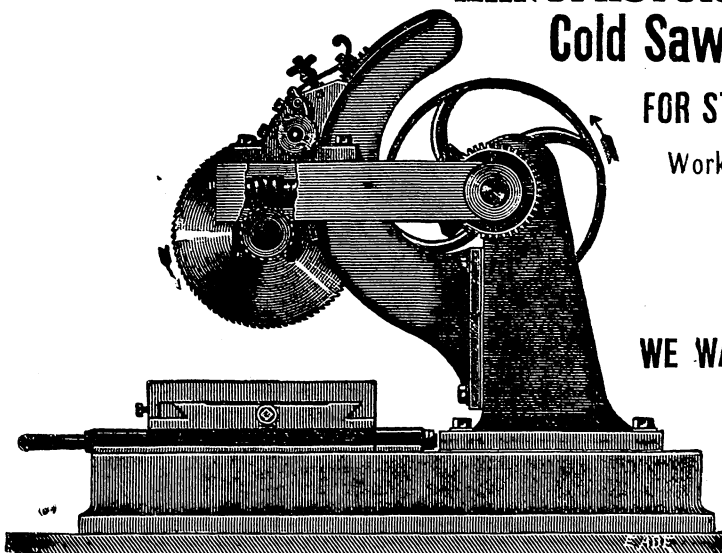
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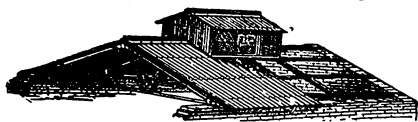
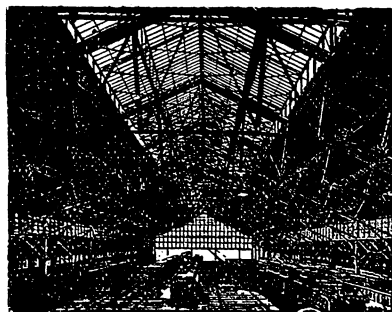
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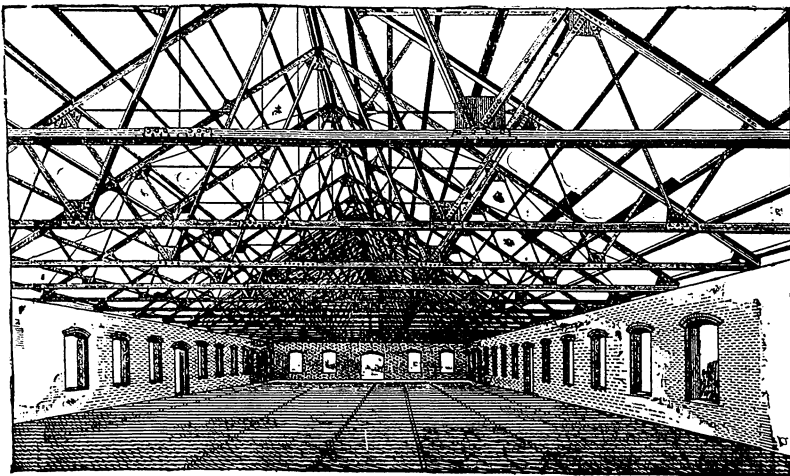
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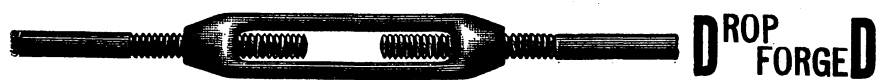
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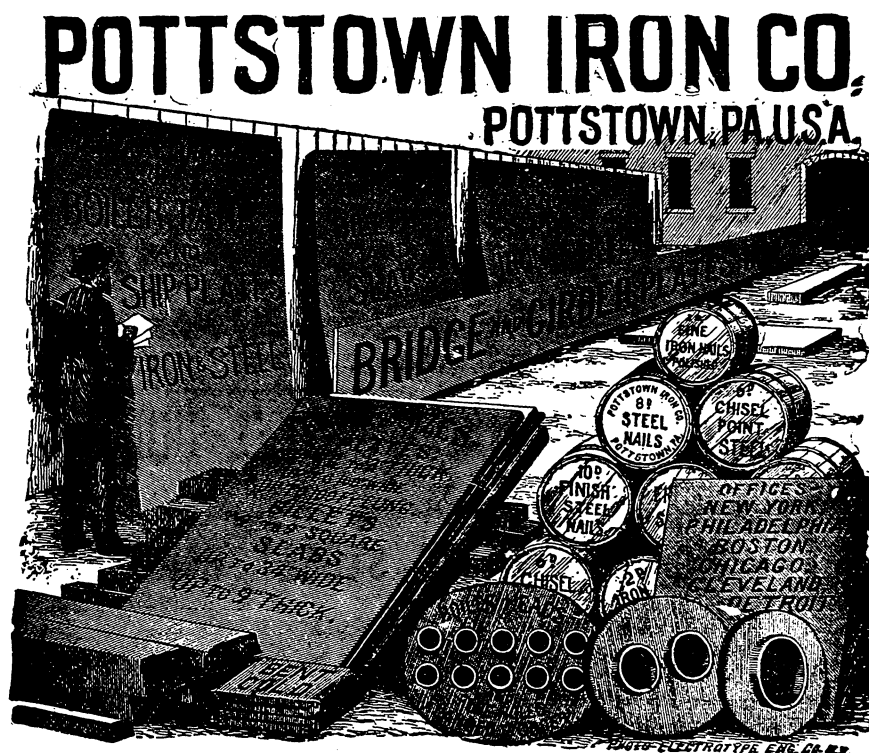
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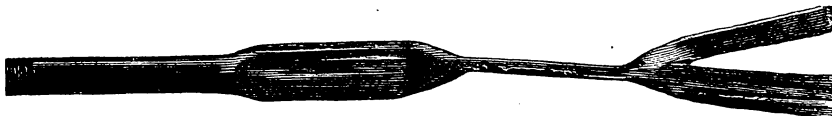
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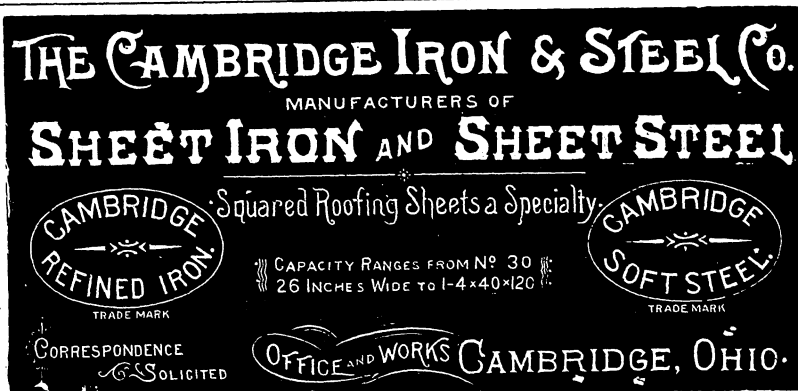


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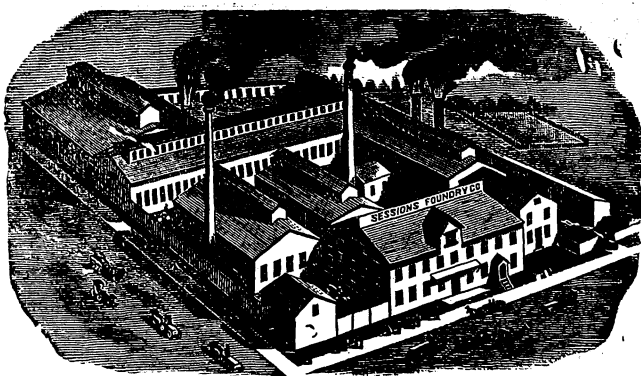
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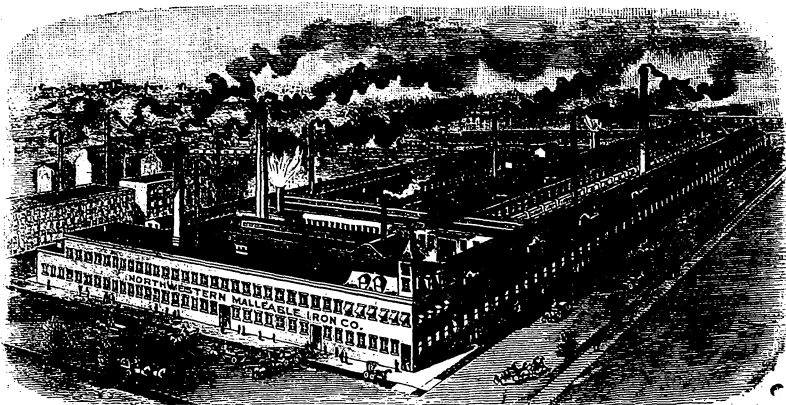
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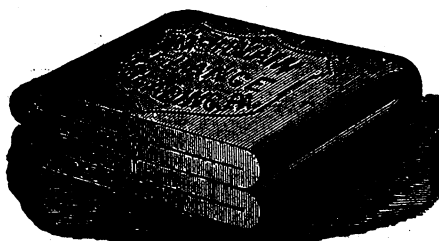
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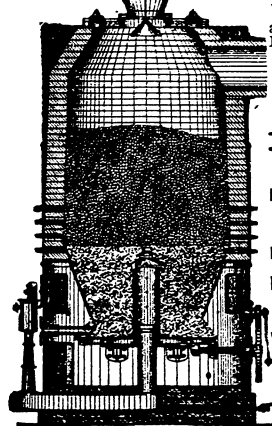
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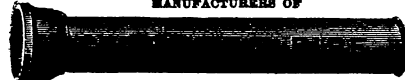
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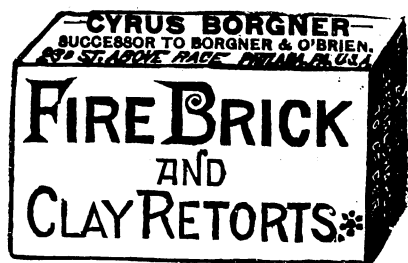
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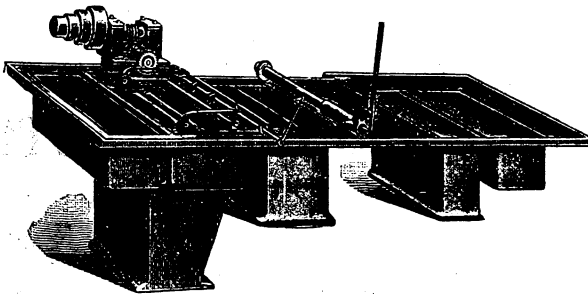
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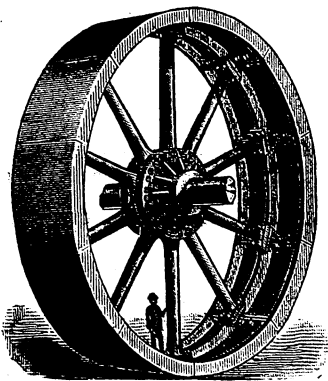
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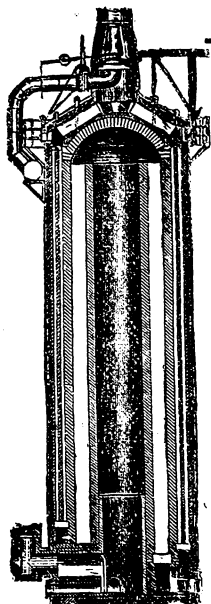
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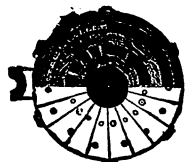
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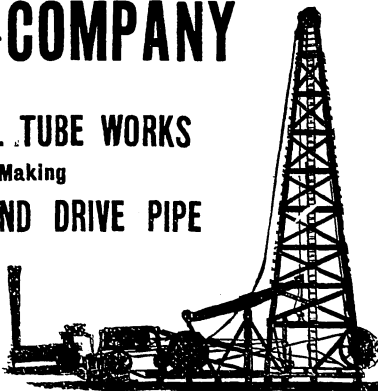
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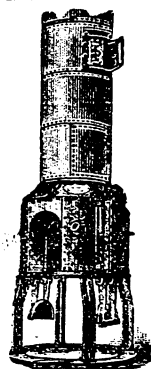
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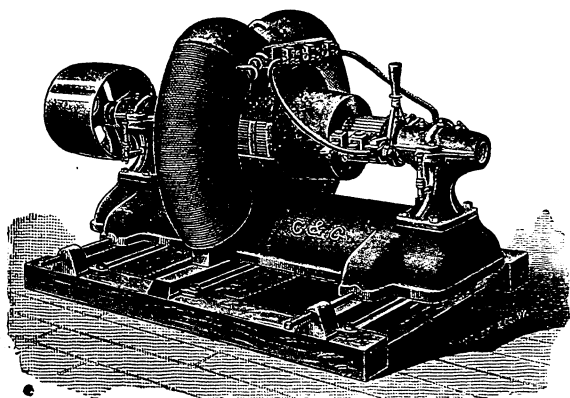
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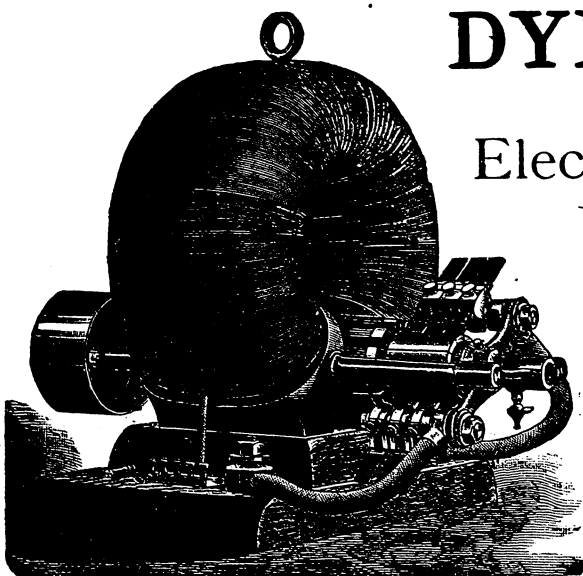
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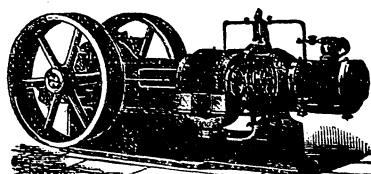
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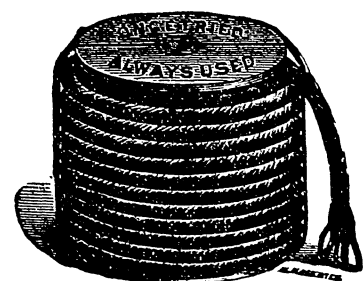
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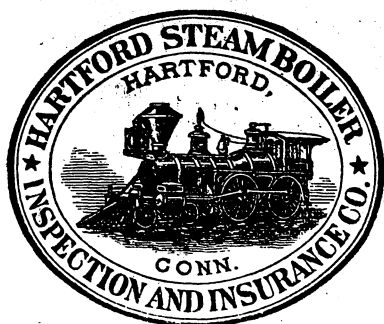
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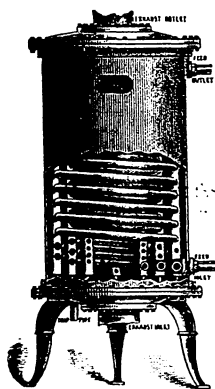


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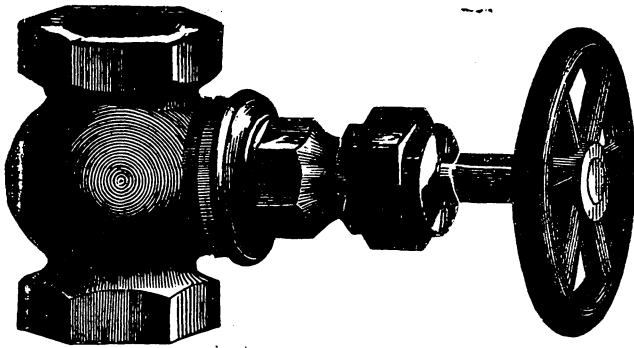
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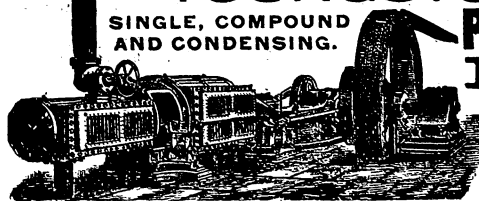
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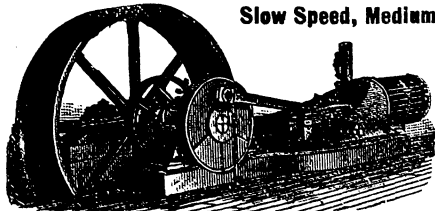


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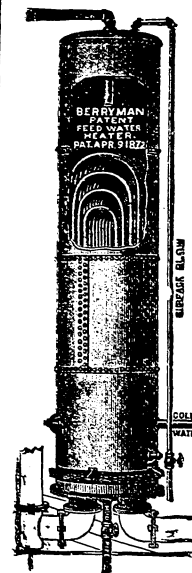


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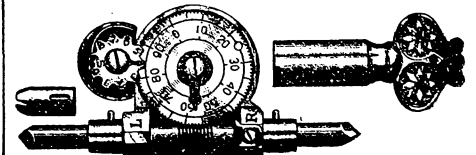
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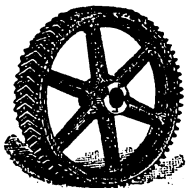
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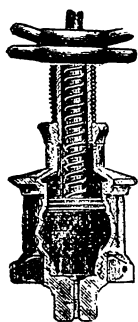
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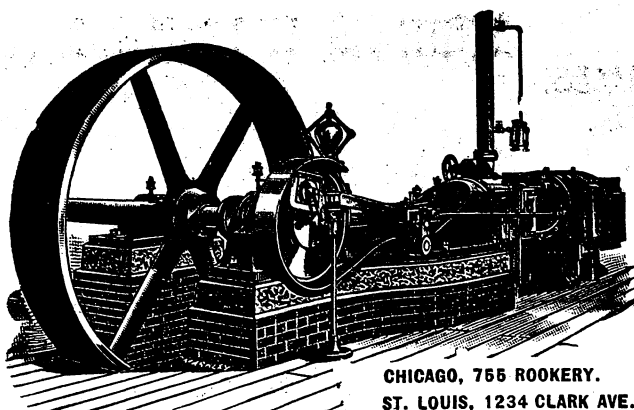
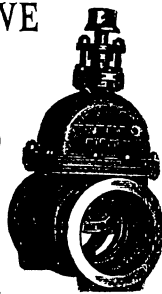
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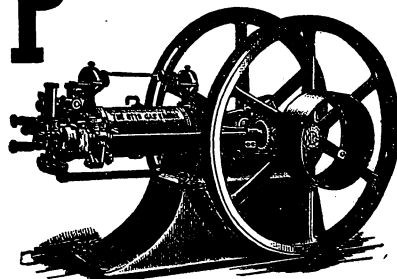
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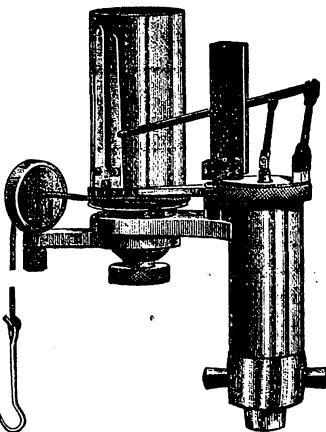
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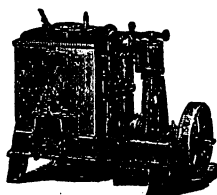
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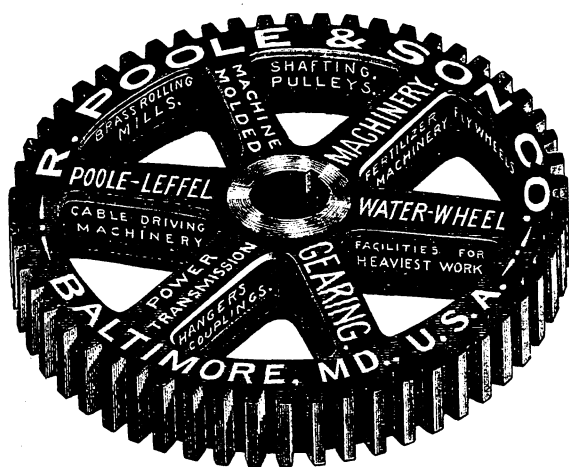
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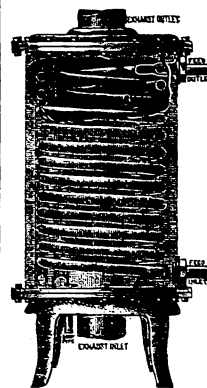
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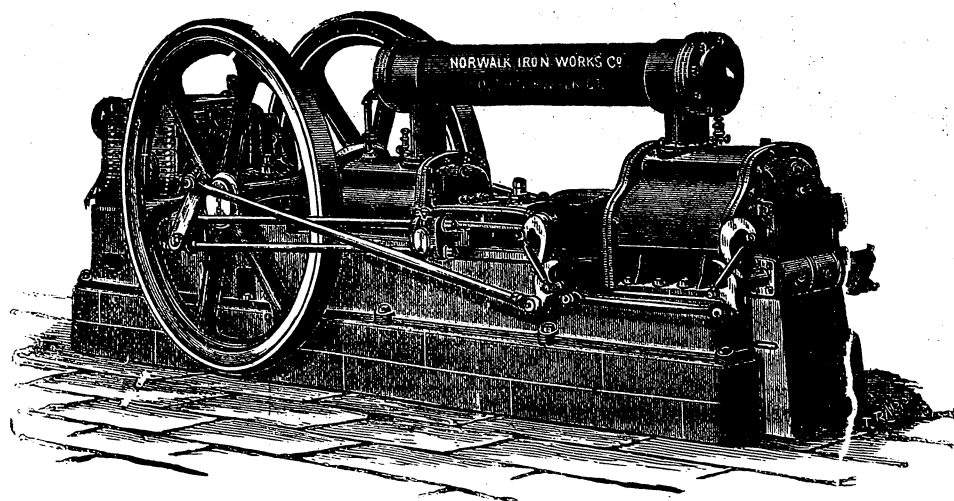
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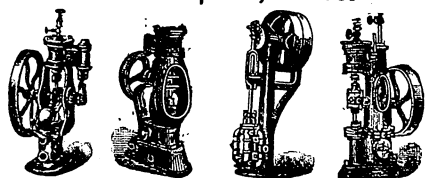


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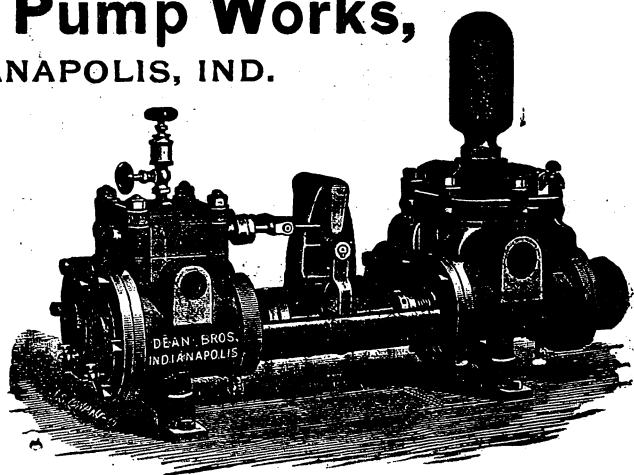
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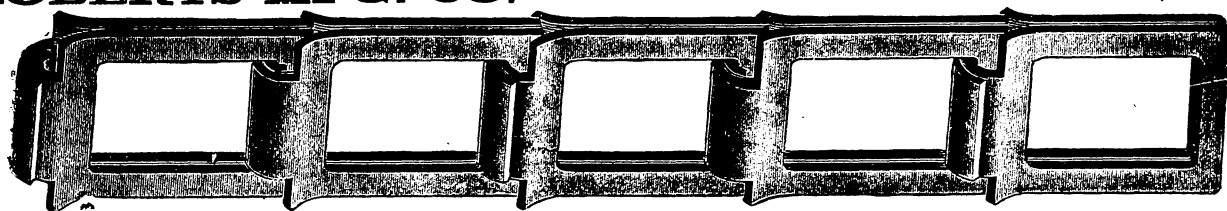
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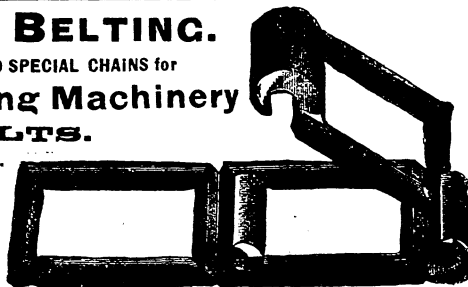
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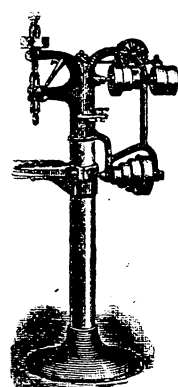
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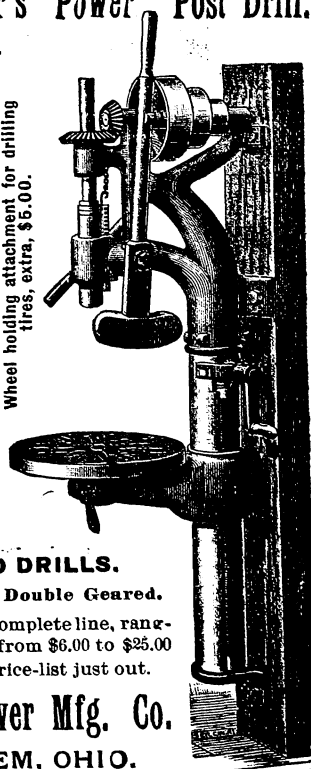
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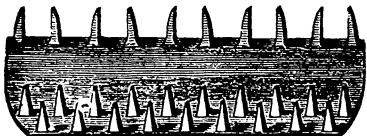
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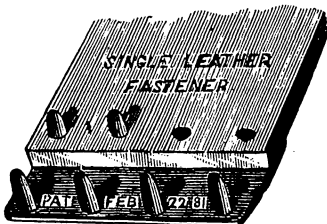
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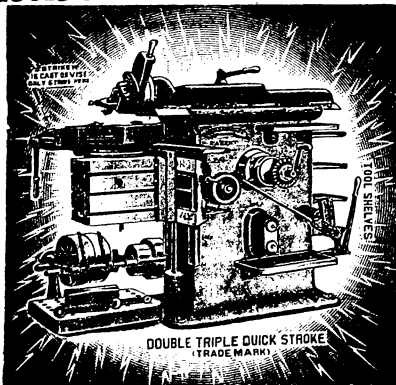
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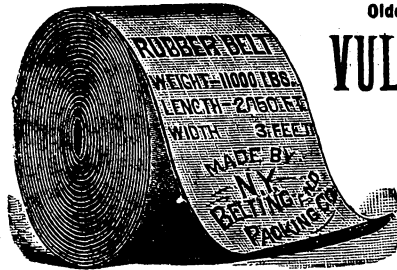
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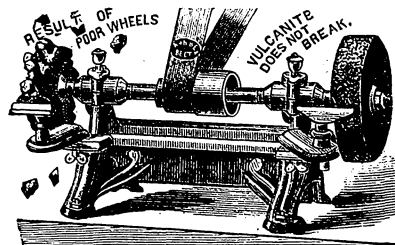
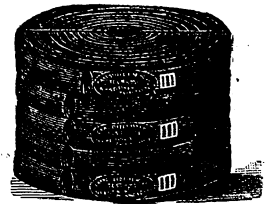
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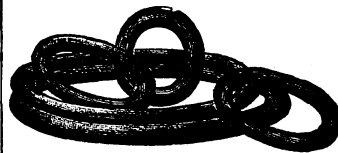
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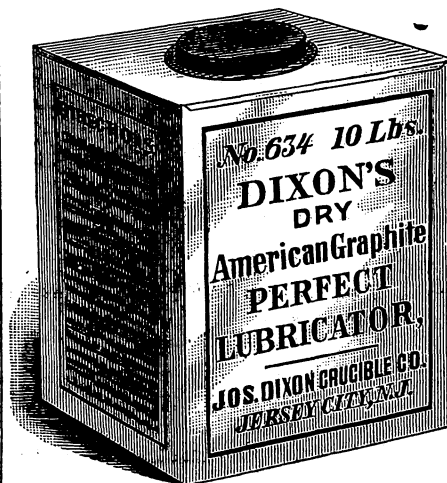
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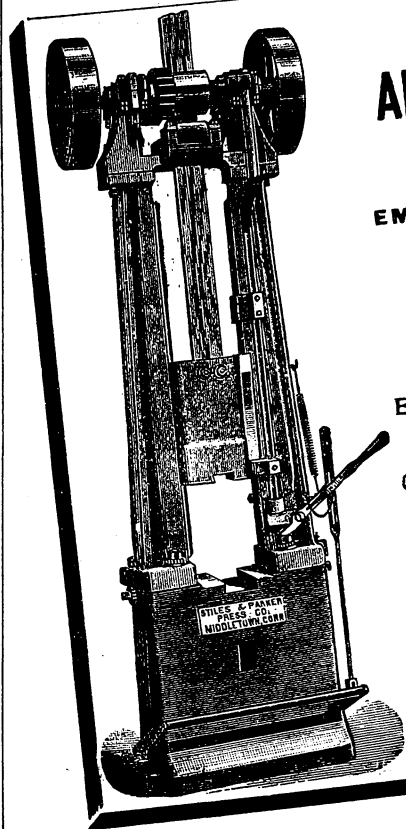
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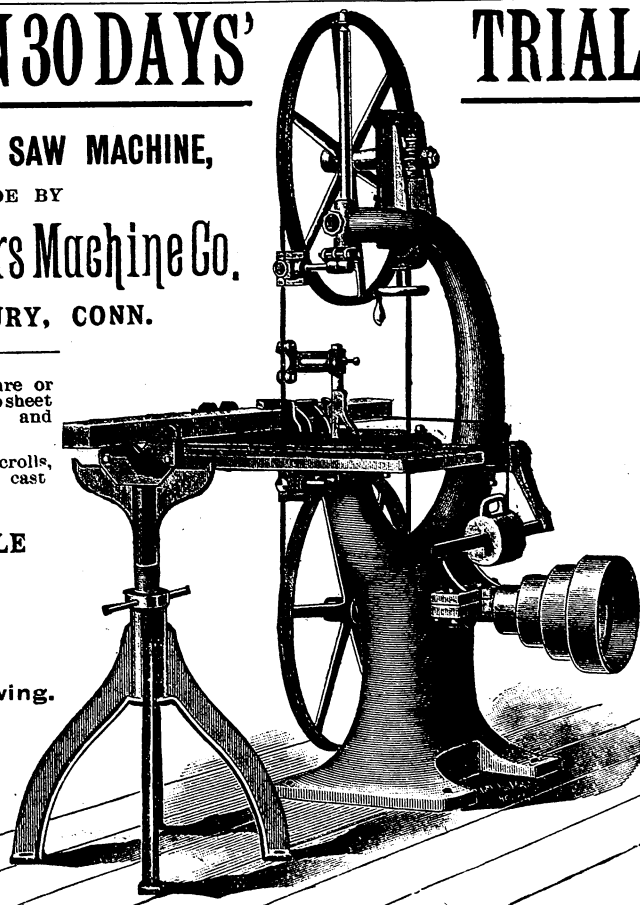
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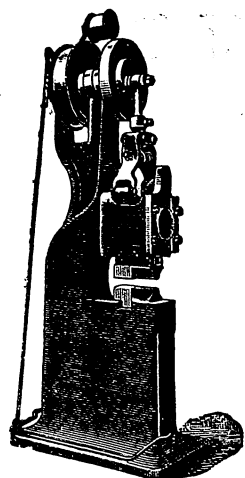
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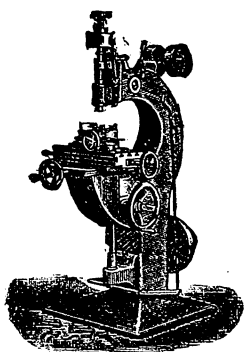
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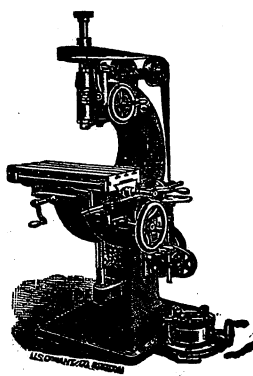
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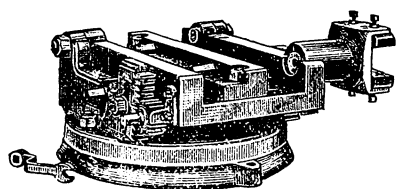
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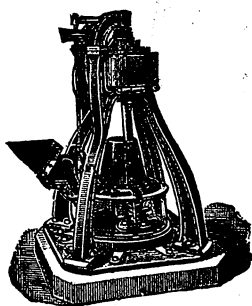
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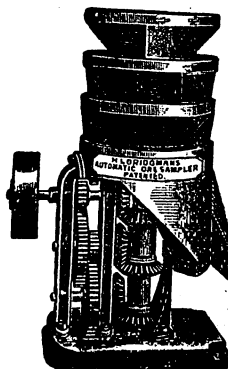


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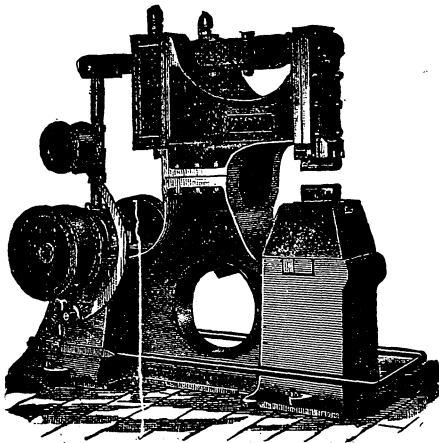
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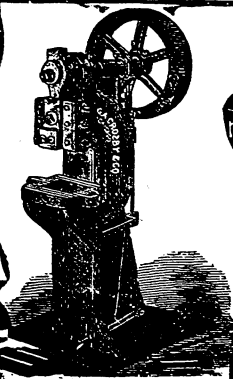
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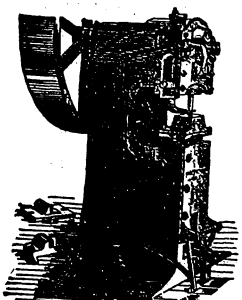
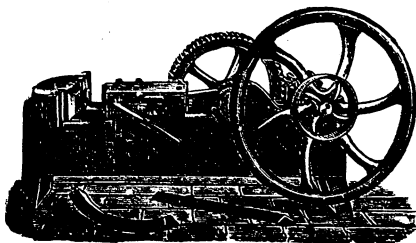
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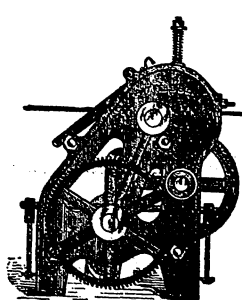
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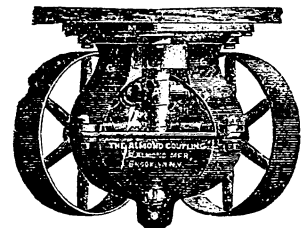
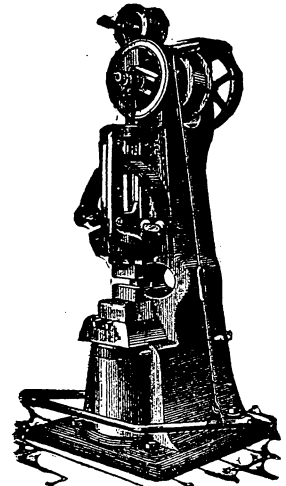
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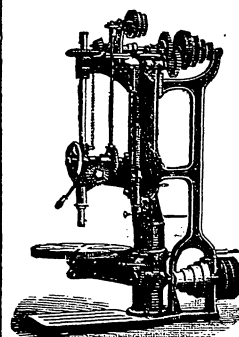
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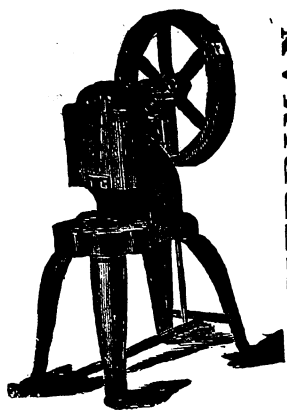
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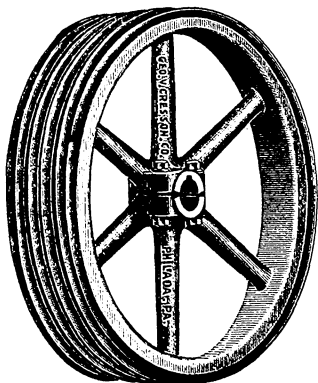


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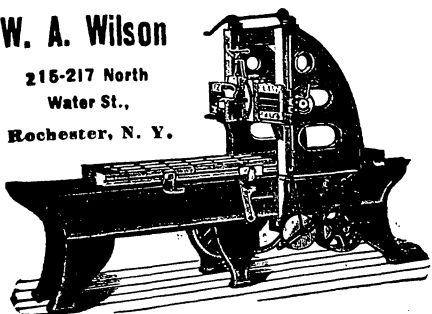
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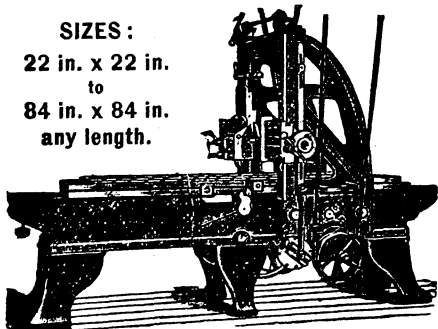


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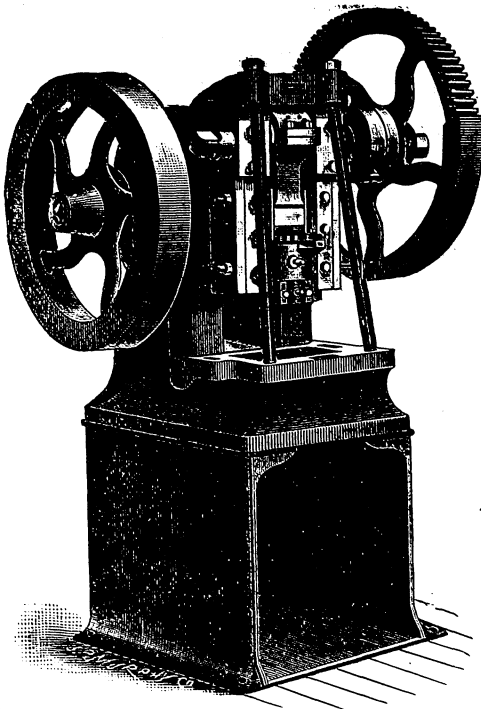
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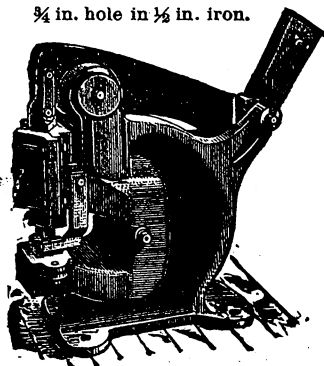
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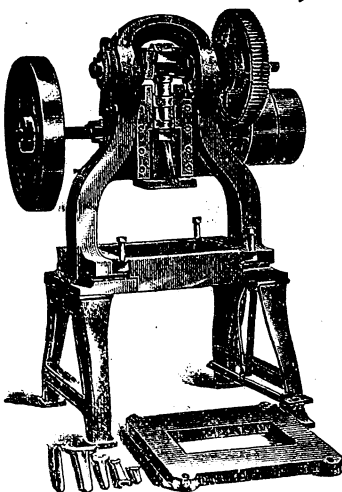
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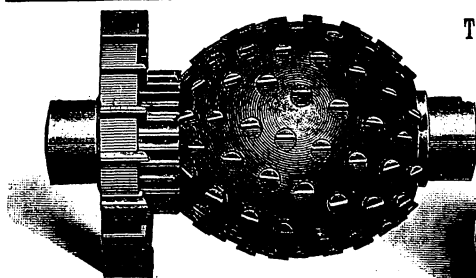
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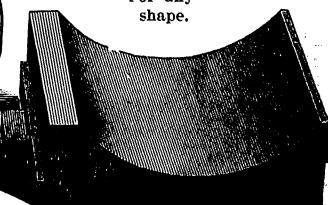


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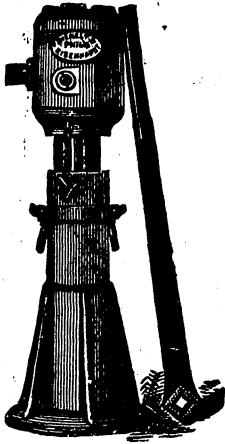


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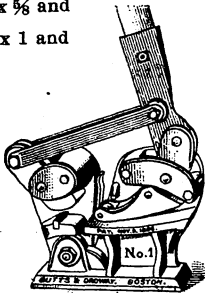
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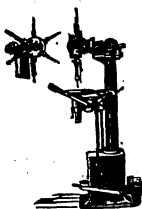
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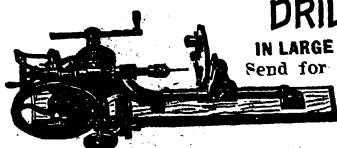
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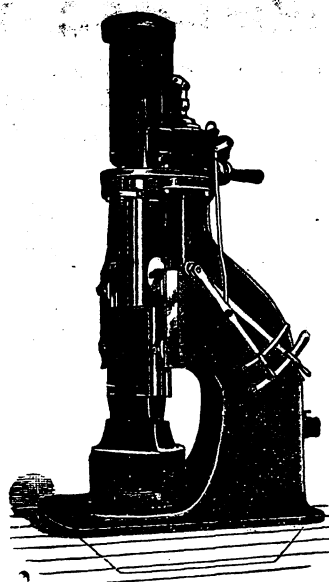


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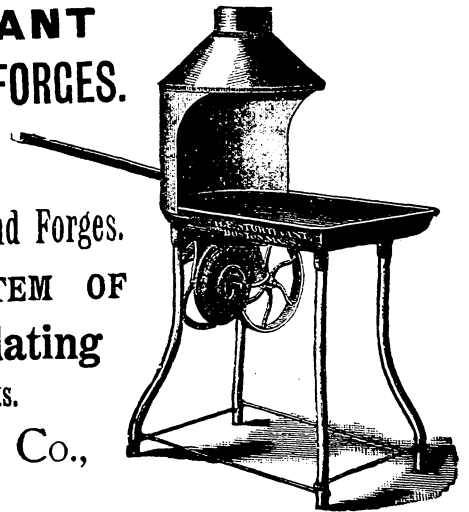
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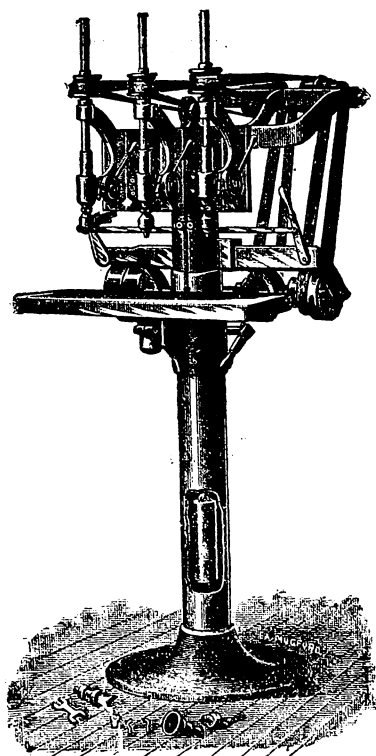
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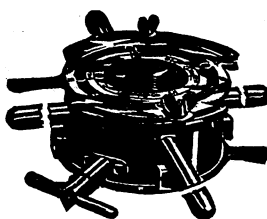
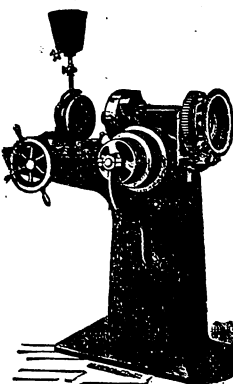
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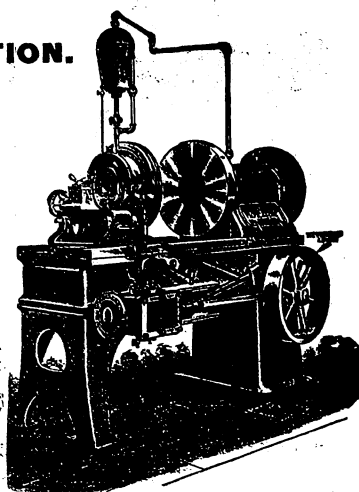
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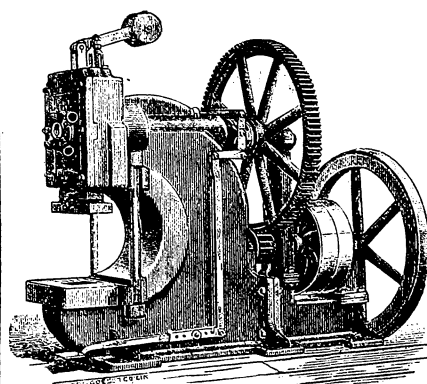
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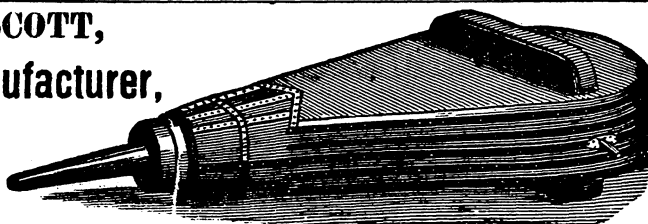
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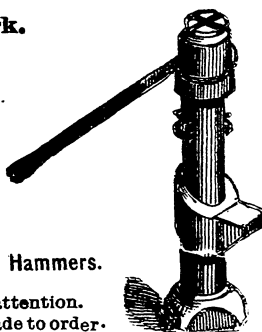
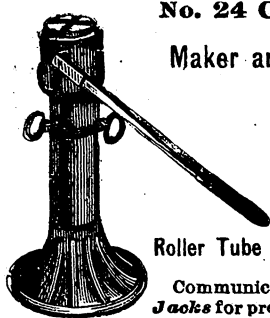
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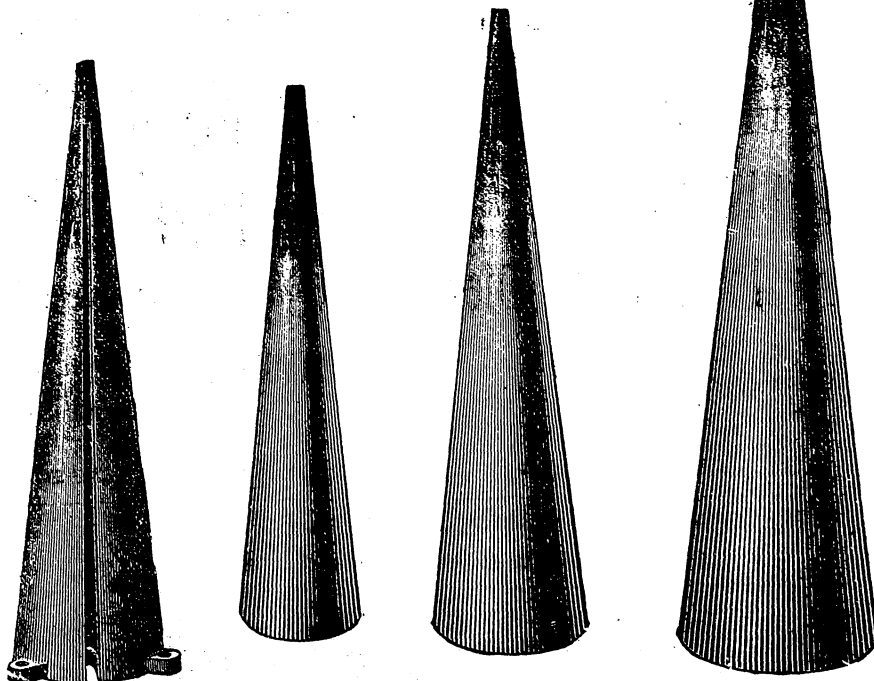
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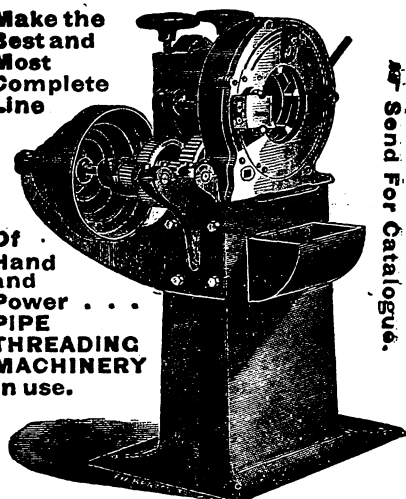


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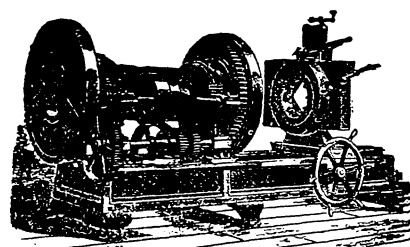
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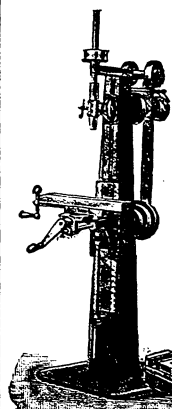
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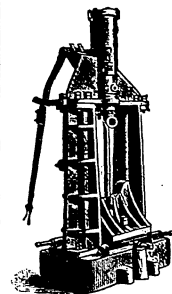
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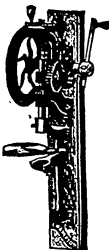
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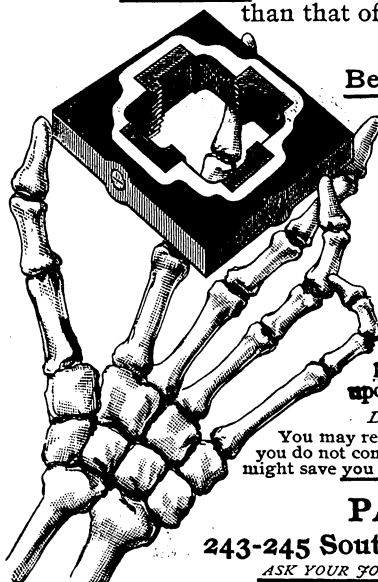


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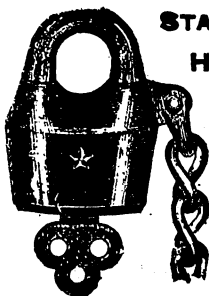
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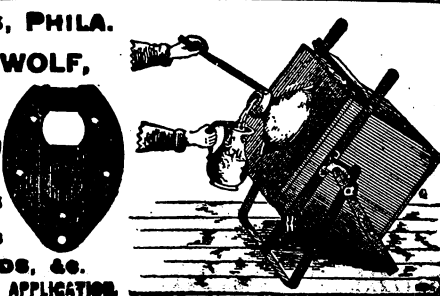
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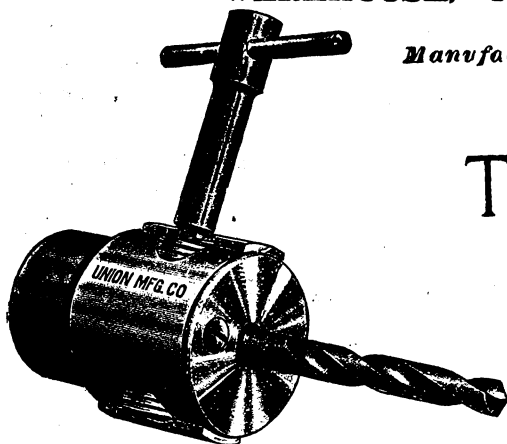
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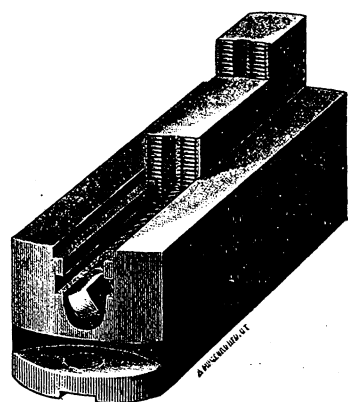
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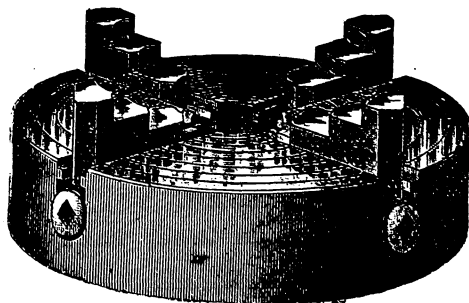
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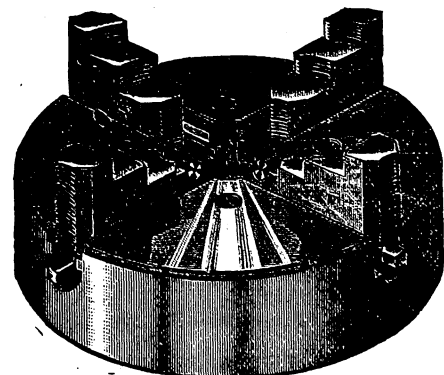


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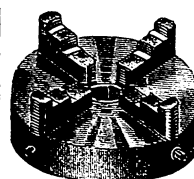
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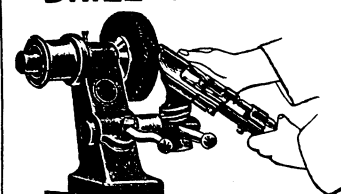


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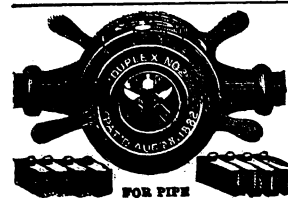
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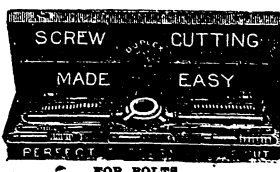


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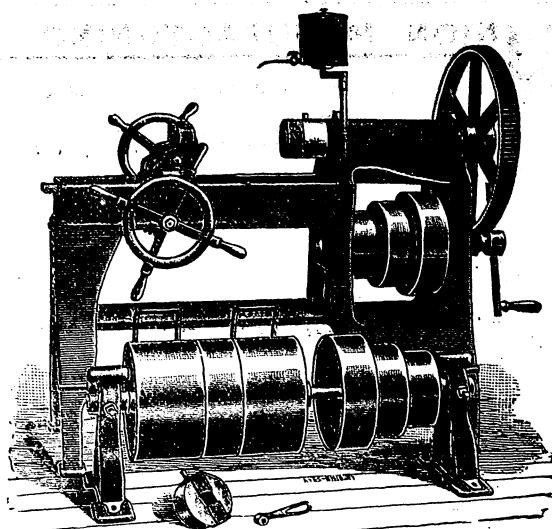
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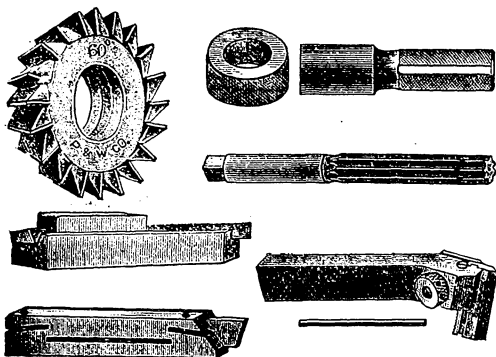
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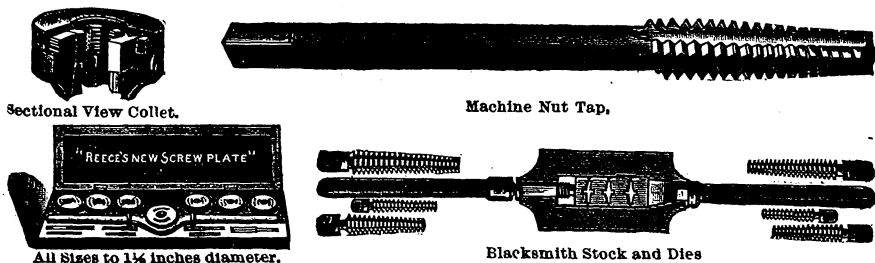
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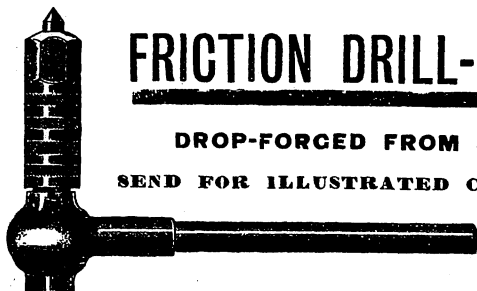


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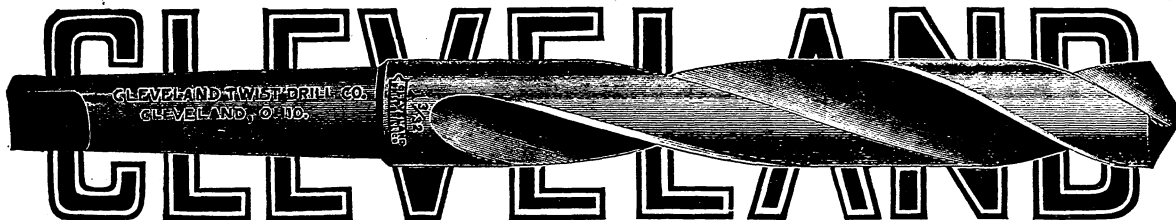
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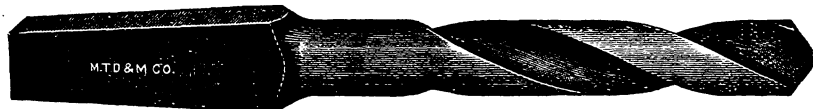
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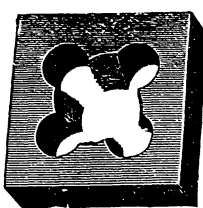
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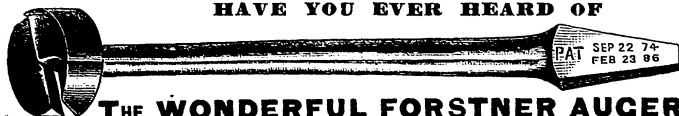
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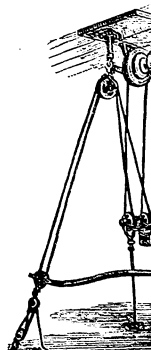
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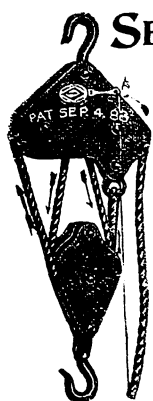
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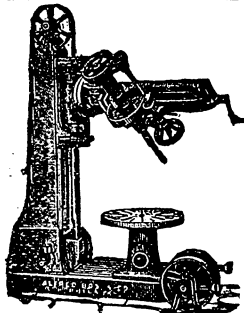
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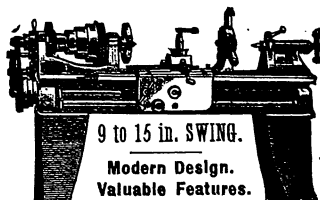
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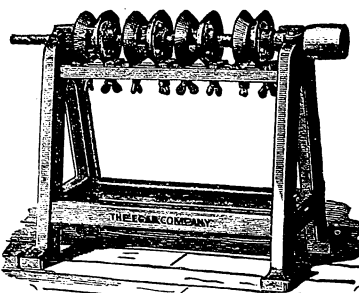
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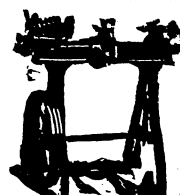
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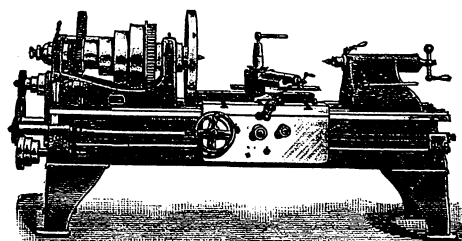


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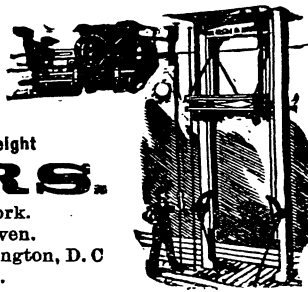
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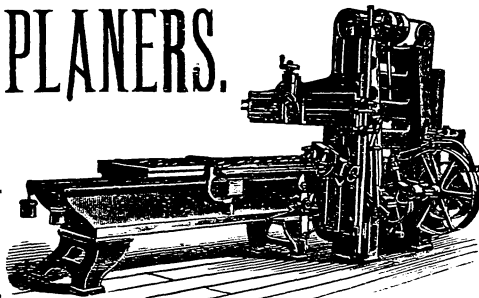
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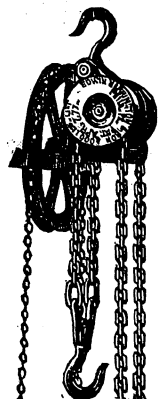
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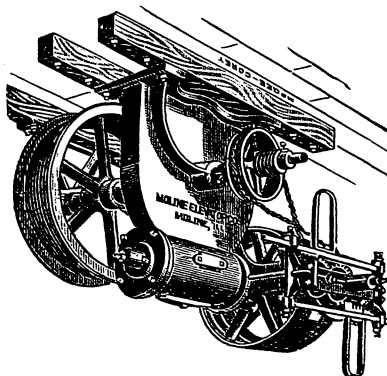
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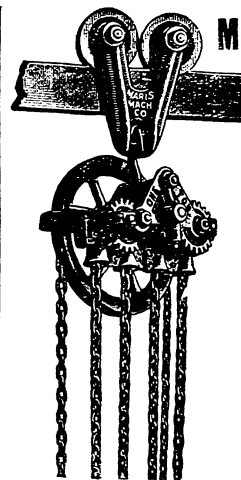
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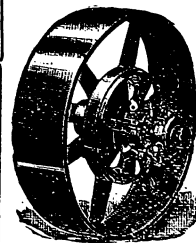
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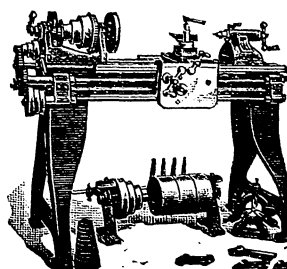


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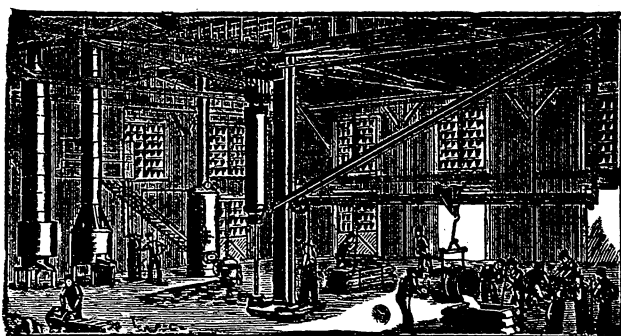
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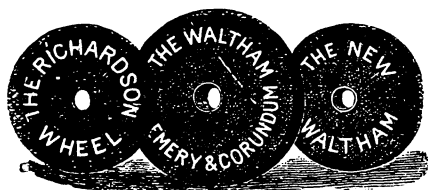
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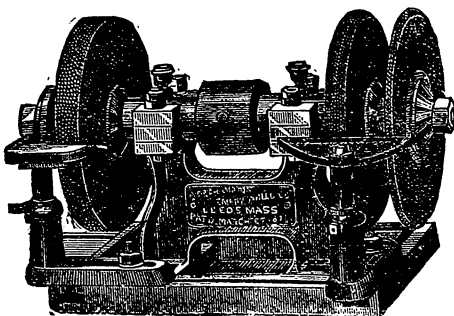


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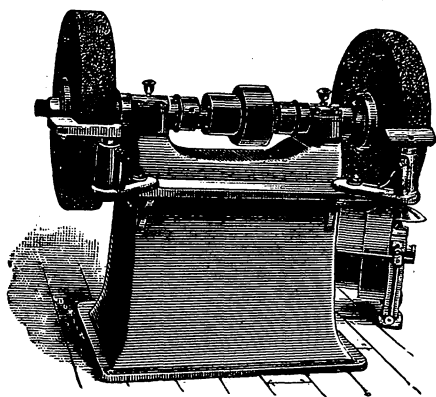
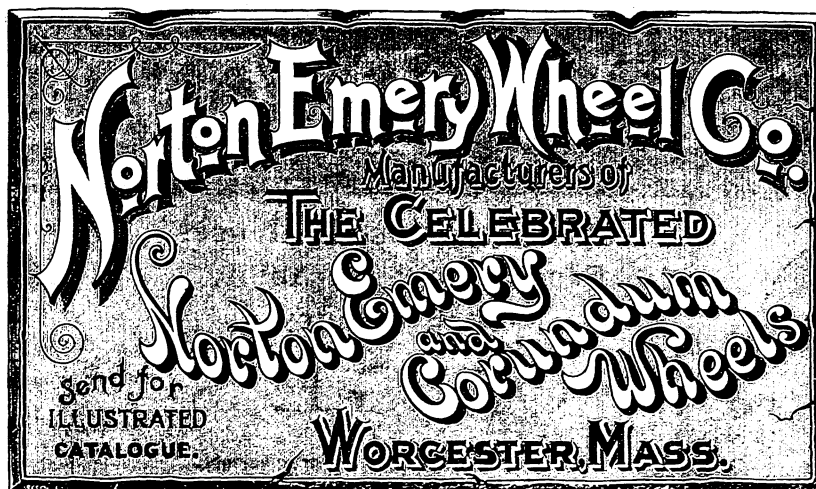
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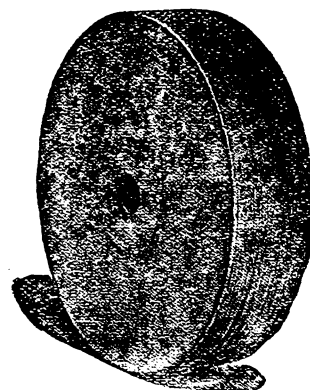
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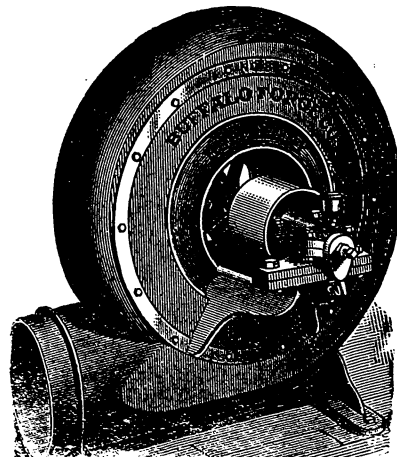
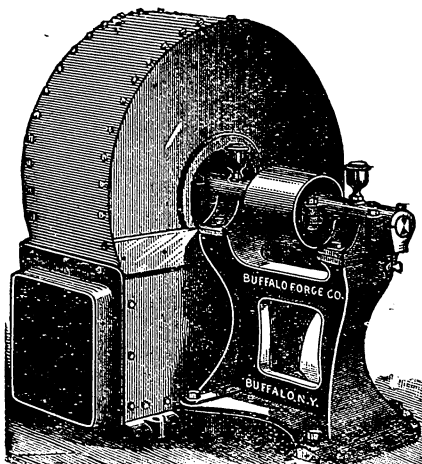
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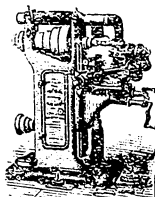
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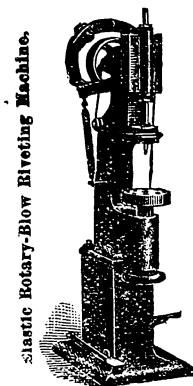
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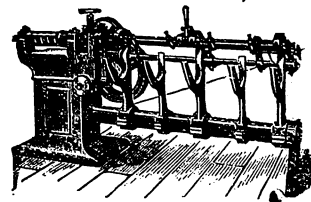
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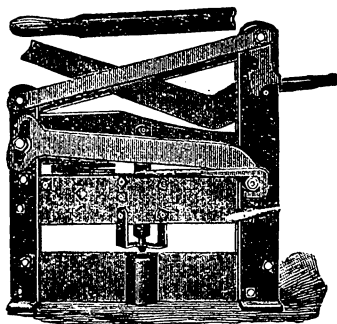
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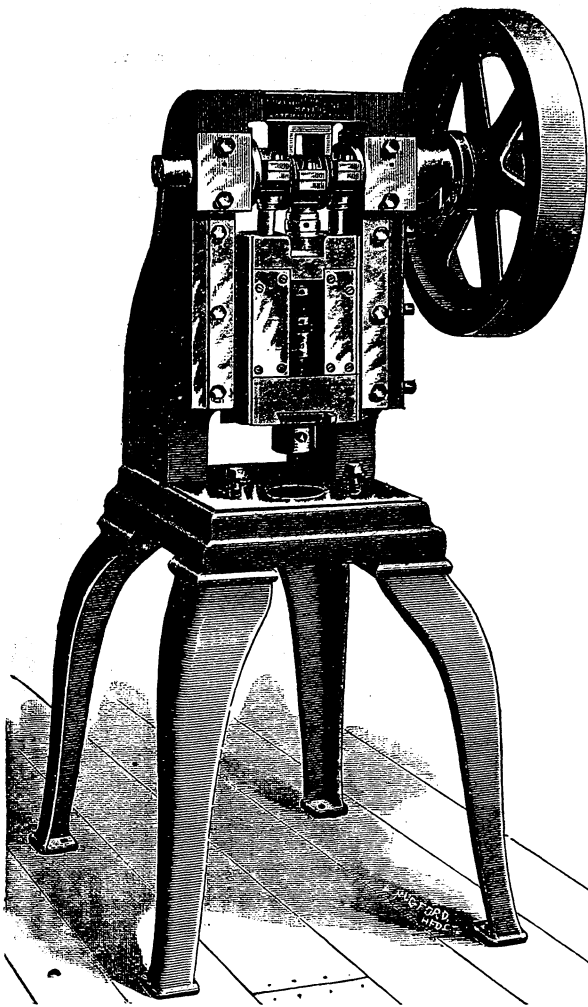
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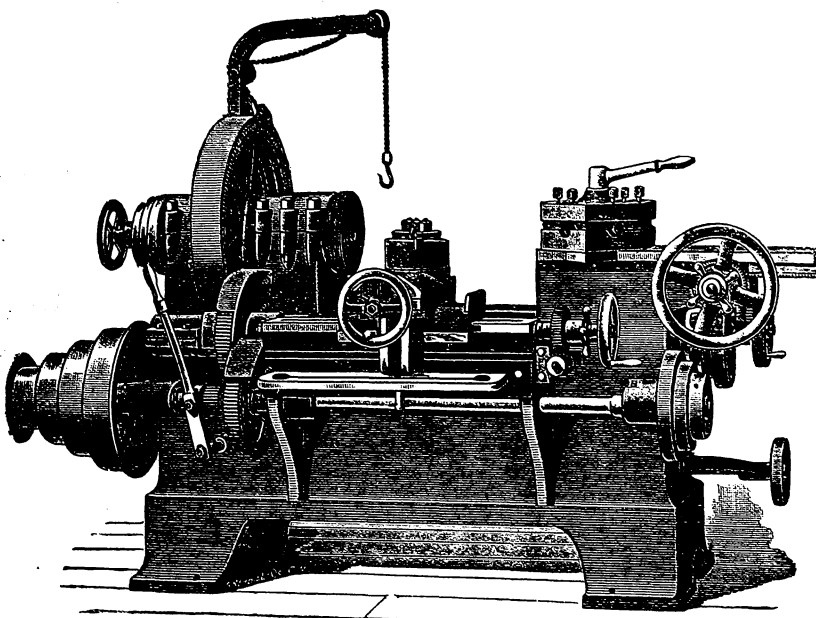
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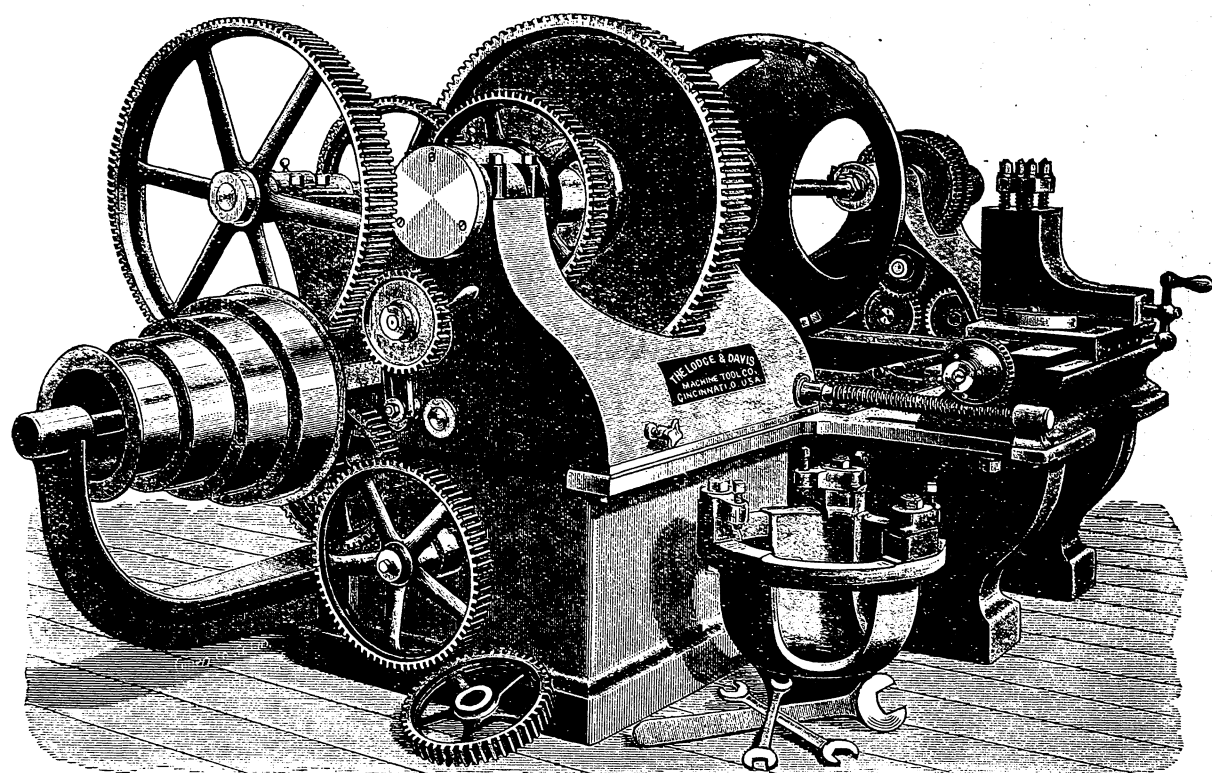


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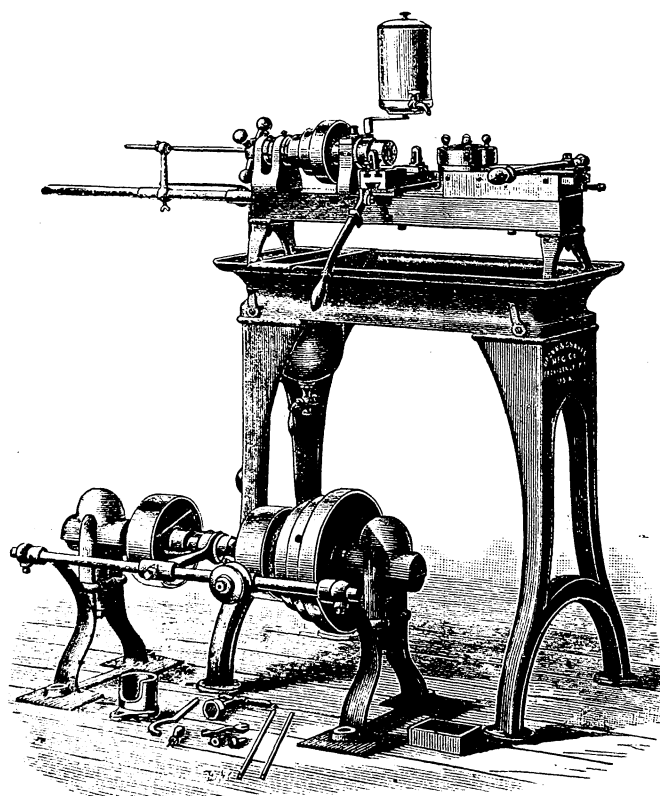
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1 Planer, planes 15 ft. 42 in. x 42 in.
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1 Planer, planes 5 ft. 24 in. x 24 in.
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1 Crank Planer, 2 ft. 18 in. x 12 in. A1.
1 Engine Lathe, 18 ft. bed, 82 in. swing, for Boring and Turning.
1 18 ft. 24 in. Lathe.
1 Engine Lathe, 13 ft. 6 in. 21 in. Betts Lathe.
1 12 ft. 24 in. Engine Lathe. Fair order.
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2 6 ft. 15 in. Wood & Light Lathes.
1 6 ft. 18 in. Lathe.
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1 28-in. Plain Upright Drill.
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1 20-in. Wheel and Lever Feed Drills.
1 Small "Eureka" Steam Hammer.
And various other tools.

NEW YORK MACHINERY DEPOT,
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NEW AND SECOND-HAND TOOLS.

2 22 x 8 Engine Lathes, new.
8 22 x 10 " " "
1 22 x 12 " " "
1 16 x 6 " " "
1 28 x 8 " " " second hand.
1 52-in. Radial Drill, new. 1 24 x 8 Planer, new.
1 Improved Key Seater, new.
1 Universal Saw Bench, new.
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Fitchburg Machine Co. Vertical Automatic Engine, 14 in. x 14 in., and a pair of same make and size with reversing motion.
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A MACHINE SHOP OF Second-Hand Tools

For Sale SINGLY.

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14 in. x 6 ft. Engine Lathe, double T rest carriage.
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16 in. x 6 ft. " " taper attachment for carriage.
16 in. x 8 ft. " " compound rest carriage.
16 in. x 8 ft. " " double T rest carriage.
16 in. x 8 ft. " " plain block " "
17 in. x 8 ft. " " double T rest " mill-
17 in. x 8 ft. " " ing attachment.
17 in. x 8 ft. " " elevating tool post carriage.
18 in. x 8 ft. " " compound rest carriage.
19 in. x 8 ft. " " " "
20 in. x 10 ft. " " " "
20 in. x 7 ft. " " plain block carriage, no screw.
21 in. x 10 ft. " " double T rest " "
24 in. x 8 ft. " " double T rest " with
upsets to make it swing 28 in.
27 in. x 12 ft. " " compound rest carriage.
35 in. x 14 ft. " " " "
19 1/2-in. Swing Drill, adjustable head.
32 in. " " back gear, self-feed.
6 ft. Radial Drill, with plain top table.
10 in. x 5 ft. Speed Lathe.
13 in. x 6 ft. " "
17 in. x 8 ft. " "
18 in. x 8 ft. " "
20 in. x 16 ft. " "
36 in. x 6 ft. Polishing Lathe.
24 in. x 8 ft. Chucking Lathe, plain head, power feed for tail stock spindle.
36-in. Gear Cutter.
Horizontal Boring and Drilling Machines.
24 in. x 24 in. x 7 ft. Planer.
25 in. x 25 in. x 8 ft.
28 in. x 26 in. x 10 ft.
42 in. x 42 in. x 20 ft. " two heads on the cross rail.
60 in. x 50 in. x 24 ft. Planer, two heads on the cross rail.

Also the following New Tools for sale at a Bargain.

12 x 5 Engine Lathe, double T rest, "Blaisdell" make.
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14 x 5 Engine Lathe, double T rest, "Blaisdell" make.
14 x 6 Engine Lathe, double T rest, "Blaisdell" make.
15 x 6 Engine Lathe, compound rest, "Blaisdell" make.
15 x 6 Engine Lathe, plain rest, "Blaisdell" make.
16 x 6 Engine Lathe, plain rest, "Blaisdell" make.
16 x 8 Engine Lathe, compound rest, "Blaisdell" make.
17 x 6 Engine Lathe, compound rest, "Muller" make.
18 x 6 Engine Lathe, plain rest, "Blaisdell" make.
18 x 6 Engine Lathe, compound rest, "Blaisdell" make.
22 x 10 Engine Lathe, plain rest, "Blaisdell" make.
24 in. x 24 in. x 6 ft. Pond Planer.

PENNSYLVANIA MACHINE CO., Ltd.,

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Successors to H. B. Smith Machine Co., Phila.

FOR SALE.

2 Horizontal Tubular Boilers, 100 H.-P.
1 Horizontal Tubular Boiler, 80 H.-P.
2 Upright Corliss Boilers, 150 H.-P.
1 Locomotive Fire Box Boiler, 50 H.-P.
1 Horizontal Slide Valve Engine, 16 x 38.
2 Large Steam Fire Pumps.
Several Boiler Feed Pumps.

Write for prices.

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I offer 3 20 in. x 24 in. Improved Straight-line
Ingersoll-Sergeant Air Com-
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built in 1890, and used only seven months at St. Clair Tunnel. Ready for delivery and in first-class condition.

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- 1 60 H.-P. Engine, Woodbury. First-class.
- 1 each 4½, 5 and 8 H.-P. Engine and Boiler.
- 2 10 H.-P. Engines, Woodbury & Booth.
- 1 5 H.-P. Engine. Cheap.
- 1 15 H.-P. Engine. Good and Cheap.
- 7 H.-P. Boilers, Vertical. Cheap.
- 1 5 H.-P. Engine and Locomotive Boiler. Cheap.
- 1 10 H.-P. Engine and Locomotive Boiler. Cheap.
- 1 15 H.-P. Engine, Woodbury & Booth.
- 1 26 in. x 13 ft. Lowell Lathe. Heavy. Fair order.
- 1 20 in. x 8 ft. Gleason Lathe. Good order.
- 1 18 in. x 6 ft. Pond Lathe. Fair order.
- 1 17 in. x 6 ft. Putnam Lathe. Fair order.
- 1 64 in. x 16 ft. Lathe. Cheap.
- 1 13 in. x 5 ft. N. Y. S. E. Co. Lathe. Good order.
- 1 20 in. x 20 in. x 5 ft. Putnam Planer. Good order.
- 1 22 in. x 22 in. x 5 ft. Putnam Planer. Good order.
- 1 Sensitive Drill, State.
- 1 Strong Lever Drill. Good order.
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- 1 B. & S. Sorew Machine, 8 in. swing. Good order.
- 1 B. & S. Head Finisher. Good as new.
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- 1 16 in. Wood Lathes, complete with countershaft.
- 1 Chair Round Machine with countershaft.
- 1 No. 5 Boston Blower. Good order.
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- 1 24-in. Planer and Matcher.
- 1 Rowley & Hermance Power Mortiser.
- 1 H. B. Smith Three-Sided Moulder.
- 1 Sand Belt Machine.
- 2 Sand Drums.
- 1 Knapp Dovetailing Machine.
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DESIRABLE Second-hand MACHINERY.

SCREW CUTTING LATHES.

- 16 in. x 6 ft., New Haven, Rise and Fall Rest. A1 order.
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- 24 in. x 24 in. x 6 ft. Pease Planer. A1 order.
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- 36 in. x 36 in. x 9 ft., Whitcomb. A1 order.
- 24-in. Hendey Friction Shaper. Good as new.
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- One No. 3 Stiles Power Press. A1 order.
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Plate Mill suitable for nail works. For particulars, &c., address

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One second-hand 10 in. x 20 in. Twiss Engine, with automatic cut off; all in good repair.
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Great Bargains

Must be Sold and Removed.

16 in. x 30 in. Horizontal Engine.

18 in. x 36 in. Horizontal Engine.

24 in. x 36 in. Horizontal Engine.

19½ in. x 48 in. Beam Engine, with

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Write us for what you want.

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One Putnam Planer, 26 in. x 26 in. x 8 ft. In fine order.

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One Ferris & Miles 500-lb. Steam Hammer.

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Turret Lathe, with slide rest. In fine order.

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Miller. In fine order.

Send for circular of Second-hand Ma-

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LATHES IN STOCK:

18 x 6,
18 x 8,
21 x 10.

Hendey Make. Get price.

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About one mile from Court House.

Foundry, Machine Shop, Pat-
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A 100-pound Bradley Strap Hammer of latest type; has been used but a few weeks and is in perfect order.

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Contractors' Outfits

- 30 Dump Cars, 36-in. gauge.
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- 3 Steam Drills, with tripods and steels.
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CORLISS ENGINES.

- 30 x 60 Harris-Corliss.
- 26 x 48 G. H. Corliss.
- 20 x 60 Harris-Corliss. (2)
- 18 x 48 G. H. Corliss.
- 16 x 48 G. H. Corliss.
- 14 x 80 Wetherill-Corliss.
- 12 x 38 G. H. Corliss.
- 12 x 36 G. H. Corliss.
- 12 x 24 Wetherill-Corliss.
- 10 x 24 G. H. Corliss.

AUTOMATIC CUT-OFF.

- 24 x 36 Babcock & Wilcox.
- 14 x 18 Halsey.
- 13 x 12 Phoenix.
- 12 x 12 Ball.
- 5 x 7 Payne.
- 150 H.-P. Westinghouse.
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SLIDE VALVE ENGINES.

- 20 & 40 x 60 Cross Compound Corliss.
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- 17 & 36 x 20 Steeple Compound Propeller Engine.
- 16 x 18 High Pressure Link Motion Propeller Engine.
- 8 & 16 x 16 Fore and Aft Compound Propeller Engine.
- 4 & 7 x 6 Fore and Aft Compound Propeller Engine.
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Boilers, Pumps, Dynamos and

GENERAL MACHINERY.

MARVIN BRIGGS, 61-63 Rutgers Slip, N. Y.

SECOND-HAND MACHINERY.

Boring Mill, 10 ft. 4 in. swing, 56 in. under cross rail, table 7 ft. 6 in. in diameter.

Boring Mill, 8 ft. 4 in. swing, 48 in. under cross rail, table 6 ft. 6 in. in diameter, two heads on cross rail.

Two 7-ft. Engine Lathes, 7 ft. between centers, face plates 6 ft. 3 in. in diameter.

76-in. Planer, 13 ft. long; heavy and powerful.

48-in. Car Wheel Borer.

Axle Lathe.

Write for photographs and further particulars.

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THE FOLLOWING Second-hand Engines, Boilers and Machinery of the best modern make, guaranteed in perfect condition:

- One 75 H.-P. and one 150 H.-P. Corliss engine. One 40 H.-P. automatic engine. 10 H.-P. to 100 H.-P. horizontal slide valve engines. 8 H.-P. to 60 H.-P. vertical engines. 2 H.-P. to 8 H.-P. Baxter portable engines. One 4 H.-P. and one 8 H.-P. yacht engine. 10 H.-P. to 40 H.-P. hoisting engines with boilers. 10 H.-P. to 60 H.-P. vertical and horizontal boilers. Six steam pumps of different sizes. One 28-in. hydro extractor or whizzer. One No. 8 Jones & Lamson screw machine. One No. 4 Windsor turret lathe. One 24 in. x 16 ft. engine lathe. One 22 in. x 20 ft. engine lathe. One 20 in. x 8 ft. engine lathe; new, cheap. One 15-in. and one 18 in. engine lathe; new, cheap. Two 16 in. x 6 ft. Blair engine lathes; new, cheap. Two 20 in. x 6 ft. turning lathes; 1½-in. hollow spindles, rod feed, with taper attachments. One 15-in. shaper. One 22 in. x 4 ft. planer. Shears for cutting ½-in. iron. Two grinders for twist drills. One large Springfield tool grinder. 2½-lb. Bradley and 10-lb. Hotchkiss hammers. 42 in. Gleason band saw, 15-in. jointer. New ammonia compressor and engine for ice making, 15 to 20 tons capacity. Large stock of new engines, boilers, machinists tools and supplies. Catalogues.

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- 1 32 x 32 x 9 New Haven Planer
- 1 Hendey Shaper, 15 in. stroke, imp. vise; new.
- 1 30 x 30 x 8 New Haven Planer
- 1 14 x 6 Screw Cutting Engine Lathe; new.
- 1 26-in. Diamond Auto. Knife Grinder, used 1 month.
- 1 28-in. " " Face
- 1 No. 1 " " Universal Face and Angle Grinder.
- 1 8-Spindle Garvin Drill Press used 1 month.

WANTED.—Good second-hand "A. S." or "4" Otis or other good make of Heater.

And other machinery, new and second hand. Write for prices. **Machinists' Supply Company**, 89, 41 and 43 Central Ave., Rochester, N. Y.

FOR SALE.

Corliss Vertical Engine, cylinder 32 x 60, latest pattern, high speed; suitable for rolling mill or electric light work. Address
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The Illinois Central Railroad Company is desirous of calling the attention of capitalists and manufacturers to the advantages possessed by the different cities and towns on their Southern Lines and on the lines of the Yazoo & Mississippi Valley Railroad Company in the shape of

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Having purchased the Auburn Manufacturing Company's plant, with greater facilities for manufacturing carriage forgings, which my increasing trade demands, I offer my former plant for sale or rent, which consists of two-story stone and wood building, 60 x 30, and three-story stone and brick building, 75 x 40. Also forge shop, 22-ft. posts, 150 x 54, with large double windows between each bent. 50 x 30 boiler house. Splendid water power, 11 ft. head. One 64-in. American Turbine. One 24-in. Little Giant Turbine. 200 ft. 2 3/4 Cold Rolled Iron Shafting. 40 ft. 2 3/4 Cold Rolled Iron Shafting. 60 ft. 2-in. Cold Rolled Iron Shafting. Furnished with self-oiling boxes. Water wheel governor; 4-ton Buffalo Scales. The premises cover about 2 1/2 acres. Shipping facilities of the best. Located near N. Y. Central and Philadelphia and Reading depots. Will be sold cheap and on easy terms or rented. For particulars address

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All inquiries for second hand pumps, of which we always have several on hand, of our own and other makes, will have prompt attention. For catalogues of the Hooker Patent Steam Pumps and full information in regard to steam pumps address

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A nice, clean stock of Builders' Hardware and Carpenters' Tools. Best location and trade in the city. Address

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Hardware business in a city of 40,000. Best location. Stock will invoice about \$10,000. Annual sales, \$30,000, which can be increased readily. Present owner is engaged in other business and can give this no personal attention. Favorable terms. Address

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One Clayton Double Cylinder Air Compressor, with self actuating valves, together with one Double Cylinder Oil Pump and Receiver.

Air Compressor,

Steam cylinder 7 in. diam., 9 in. stroke.

Air " 9 in. " 9 in. "

Oil Pump,

Steam Cylinder 3 in. diam., 5 in. stroke.

Oil " 1 1/2 in. " 5 in. "

Oil chamber 24 x 30 in.

Receiver 24 x 80 in.

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FAYETTE R. PLUMB,
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WANTED,

At Colorado City, Texas, a Roller Mill to be put up at once. Big inducements offered. Address
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WANTED.

Foundry Contracts to be completed before September 1st. Capacity of works, 9 tons per day. Can make close prices and prompt shipment.

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Stock of Hardware, Stoves and House-furnishing Goods at West Superior, Wisconsin. Business has been established seven years. Sales average \$80,000 yearly. Stock and fixtures will inventory \$15,000; can be reduced to suit purchaser. This is a splendid opportunity to engage in an established business, in the most promising town in the Northwest. Apply
CHAPIN-WELLS HARDWARE CO.,
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In New York State, near railroad, for sale. Analysis by Andrew S. McCreath, Harrisburg, Pa.:

Titanic acid.....none.
Metallic iron.....86.600.
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WANTED.—Two second-hand Sheet Mill Housings, with boxes and screws; also sufficient bed plate for the same. Light housings will answer. Send sketch and dimensions, with lowest price. Also one second-hand jib Crane, operated by steam, of about 10 or 12 tons capacity. Send drawing, showing dimensions, with lowest price. Address "STEEL," No. 46, office of *The Iron Age*, 96-102 Reade St., N. Y.

FOR SALE.—A stock of Hardware, Sash and Doors; will invoice about \$5000. Situated in a growing town in Southern Indiana of 1000 inhabitants. Only stock in place. Address
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To PURCHASE PATENTS and Rights to manufacture for some small and simple specialties or tools. Address!

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Coal Mining Outfit complete, pumps, engine, cars, &c. Also 230 tons 56-lb. Rails for relaying, including splice bars, spikes and ties, if desired. All will be sold cheap for cash. Address

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Having a large and centrally located store, convenient to the hardware trade of New York City, would like to secure agencies for heavy hardware, pipe, iron, &c., on salary or commission. Address

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Punching and Shearing Machinery.

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Rails, Splices and Cars. Analytical and Physical Laboratories. Examination of Iron and Steel Works and advice on Processes.

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BUELL LAMBERSON,

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Valuable Iron Works FOR SALE, To close an Estate.

The undersigned, Executor of L. M. Dayton, deceased, offers at private sale the **Anchor Iron and Steel Works** and the **American Nut and Bolt Works**, situate in Newport, Kentucky.

The whole property has a frontage of 500 feet on Front street, in that city, and extends back over 200 feet to the Ohio River.

The rolling mill has a capacity of 6000 tons bar and 1200 tons light or steel sheet per year.

The Nut and Bolt Works is doing a business of from \$400,000 to \$500,000 per year. Both plants are in good running order, with a large and valuable trade, and at present running to their full capacity. They will be sold at a sacrifice in order to close the estate of L. M. Dayton, deceased.

For further particulars apply on the premises in Newport, Kentucky, where an examination of the property can be had, or to the undersigned at his office in Cincinnati, Ohio.

JOHN W. HERRON, Executor.

Cincinnati, Ohio, April 7, 1893.

FOR SALE.

A well established jobbing, building, wholesale and retail Hardware business at the thriving and growing city of Kalamazoo, Michigan, an important manufacturing center with excellent shipping facilities. **The stock** will inventory about \$30,000 and is in good, clean condition. **The annual sales** have been about \$30,000 per annum. **The trade** is principally with manufacturing concerns at Kalamazoo, with small dealers in surrounding towns and with builders and contractors. A large general trade has also been done. The business is capable of large extension. **Cause of sale**, the death as the result of accident of the proprietor, C. H. Dickinson. For terms and information apply to

A. J. MILLS, Executor, Kalamazoo, Mich.

Dated April 3, 1893.

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Buyer and Seller of Odd Sizes of
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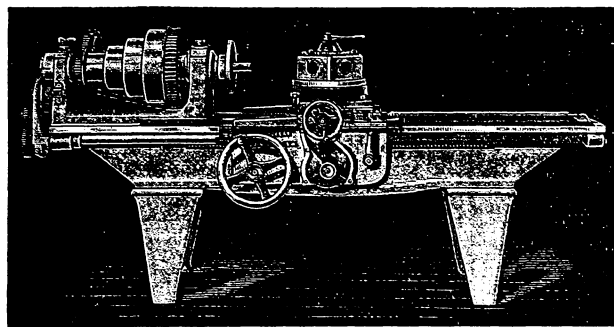
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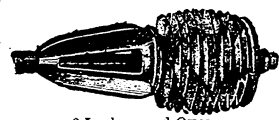
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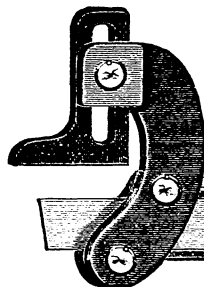


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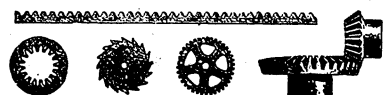
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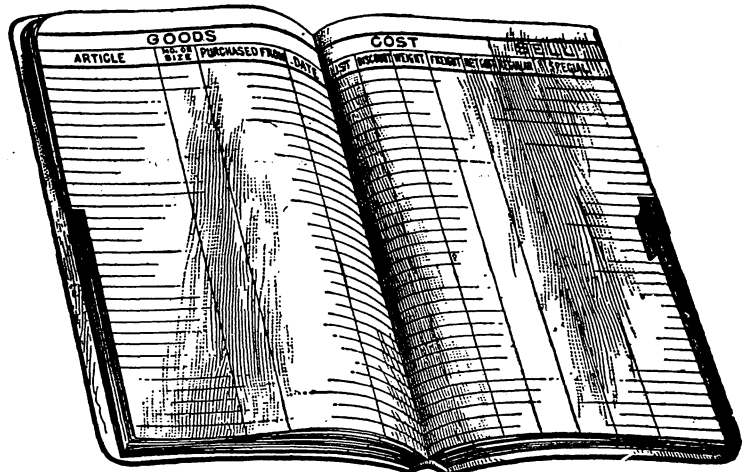
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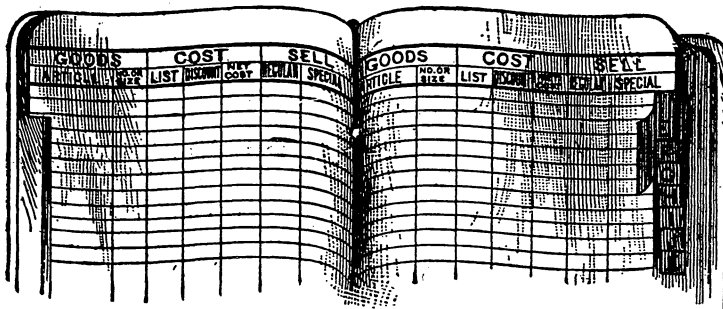
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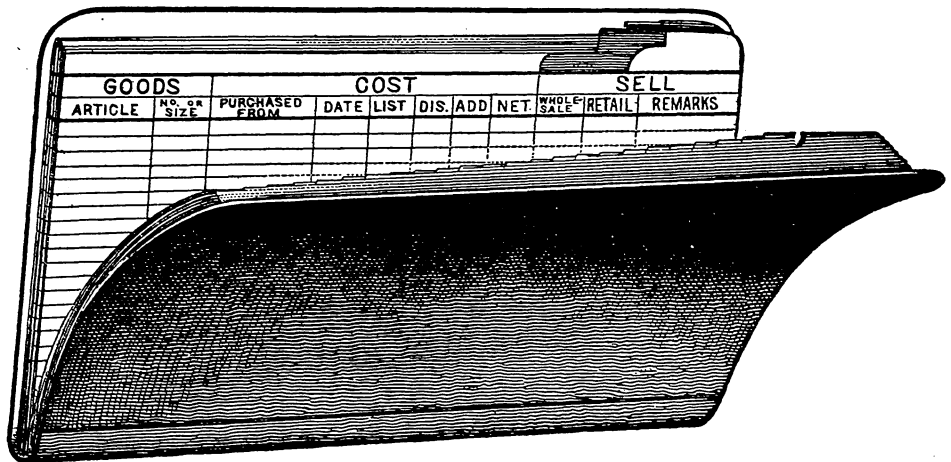
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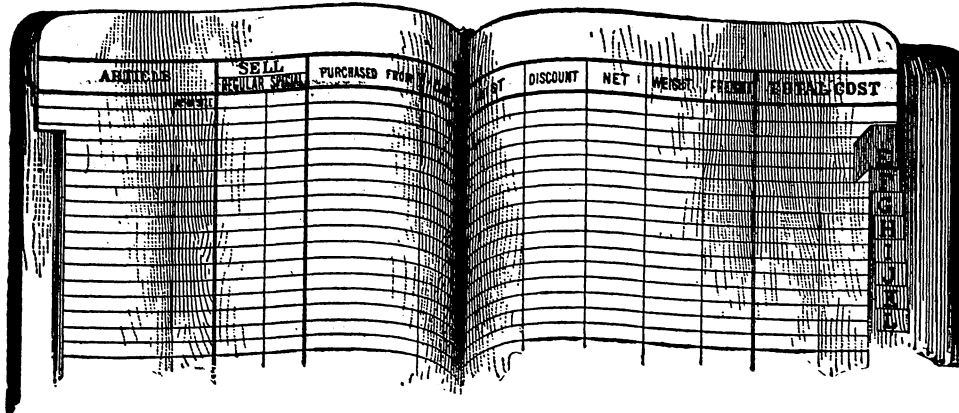
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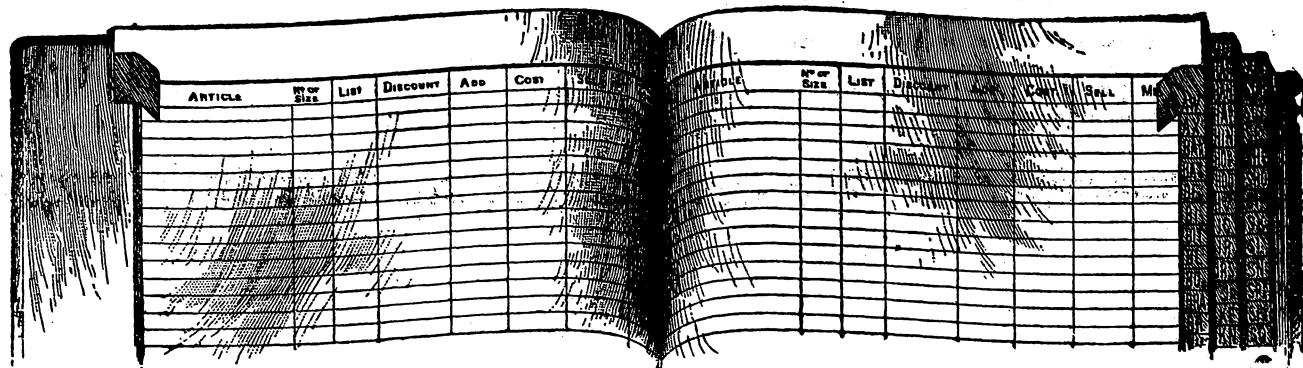
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" Bits,	"	BIT	" Locks,	"	LO	" Stones,	"	STO

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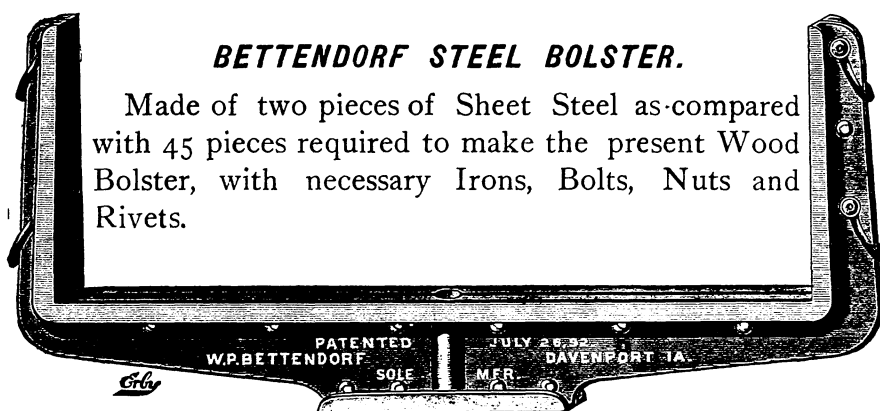
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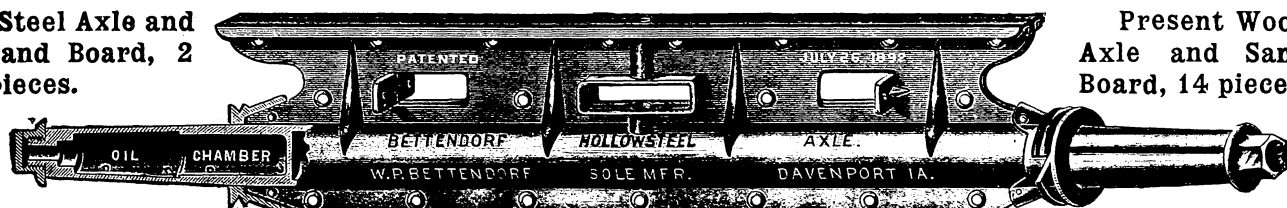
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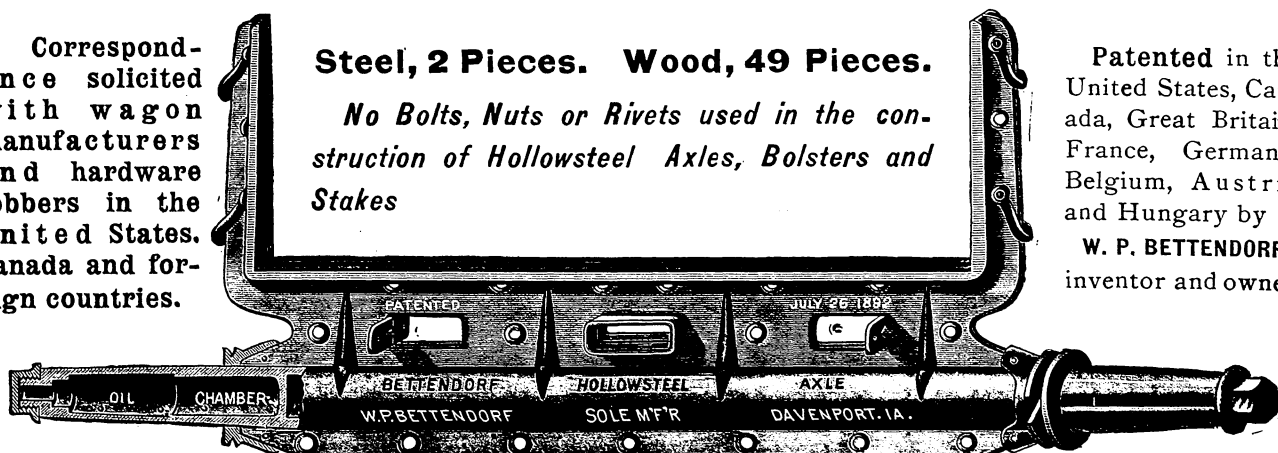
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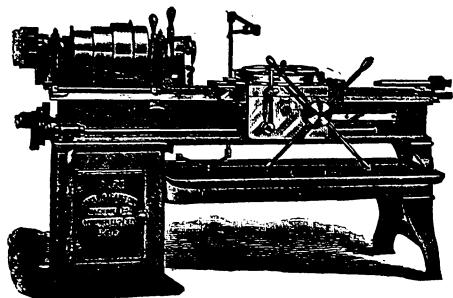
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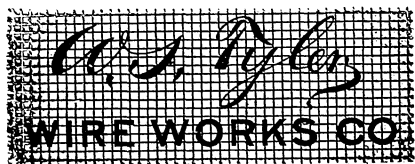
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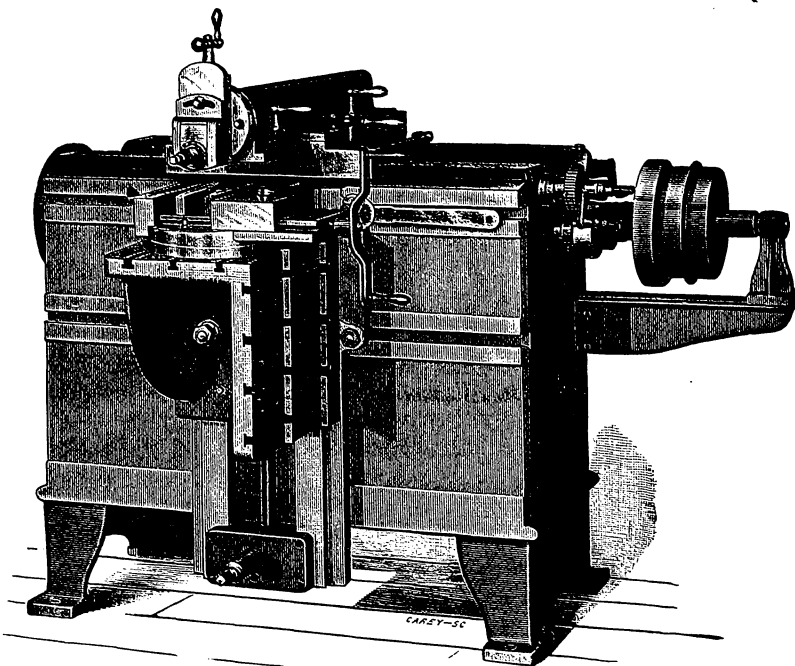
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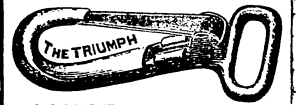
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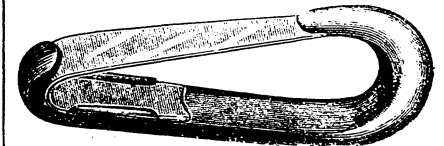
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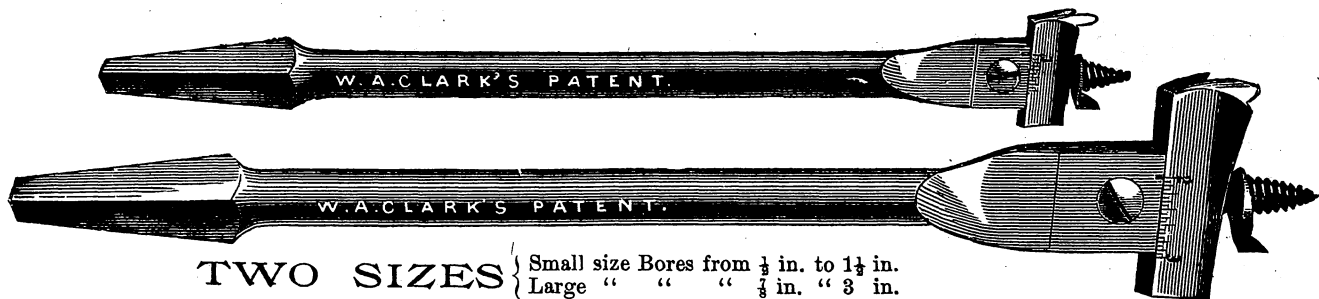
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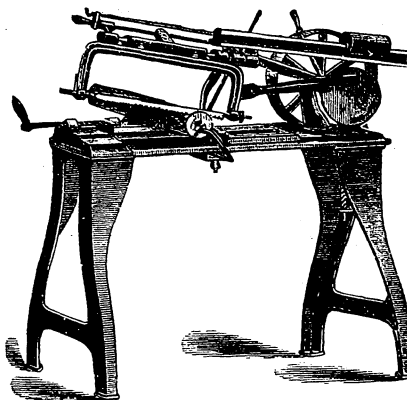
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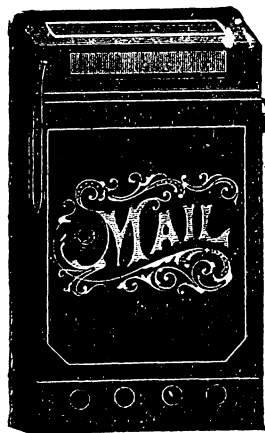
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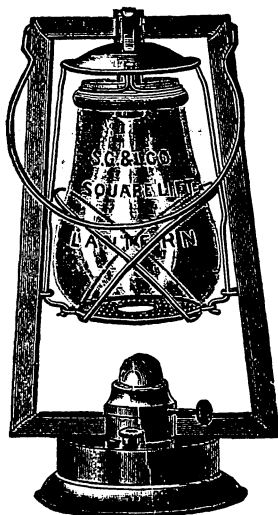
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Fig. 130.

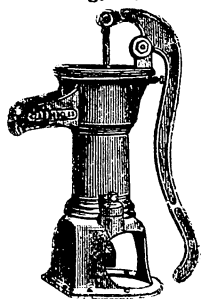
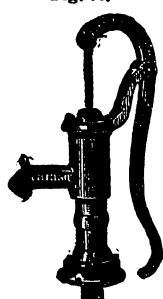


Fig. 76.



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Fig. 209.

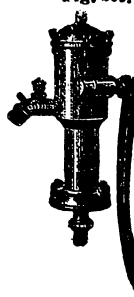


Fig. 381.



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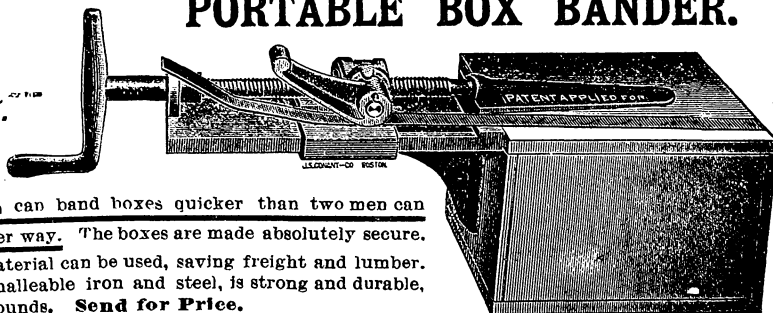
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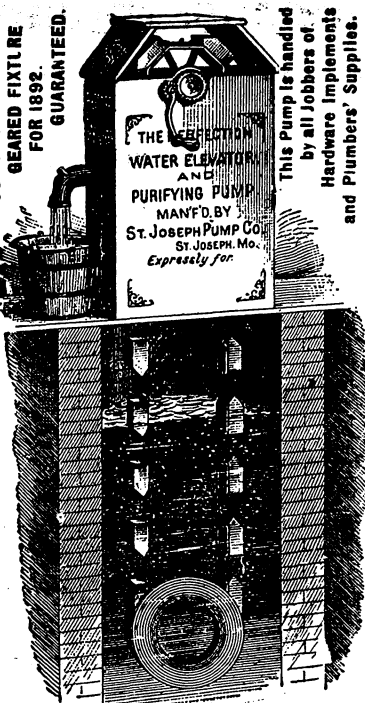
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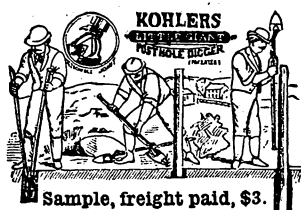
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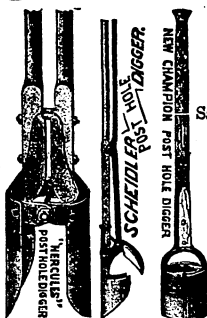
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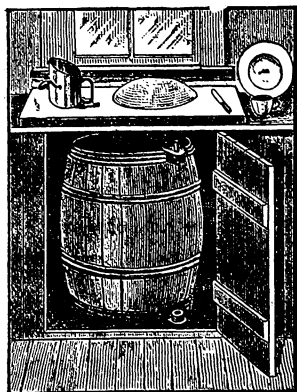
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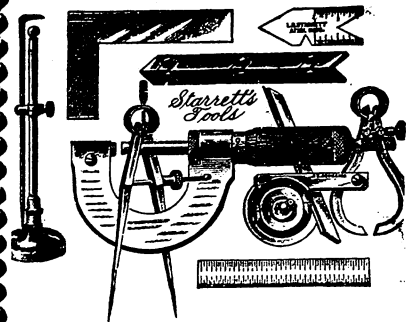
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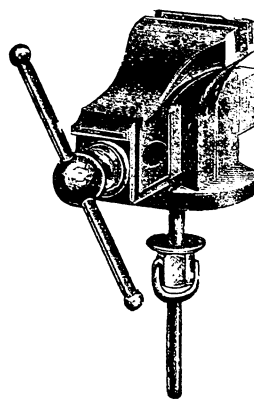
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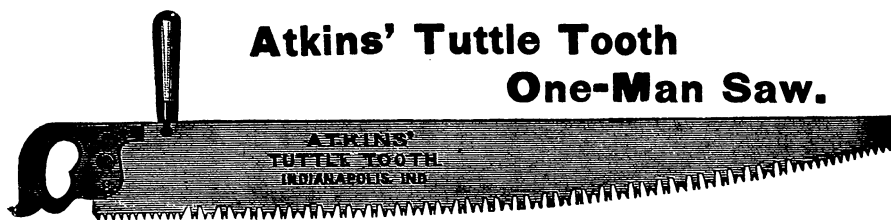
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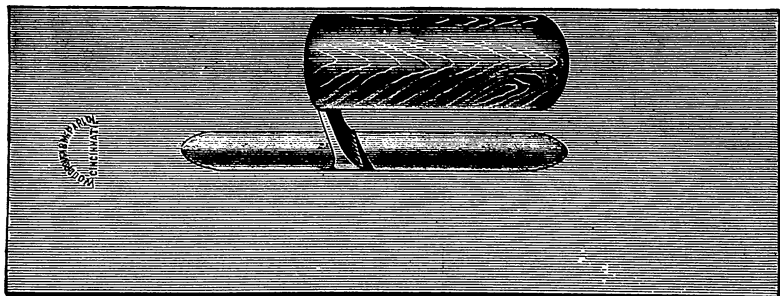
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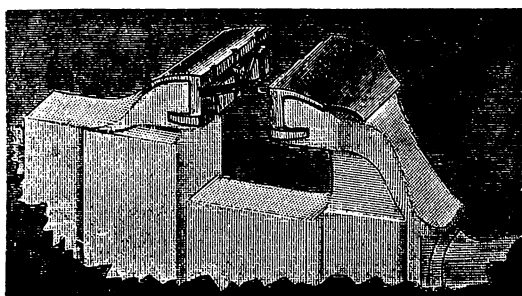
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4 " " " 50 "
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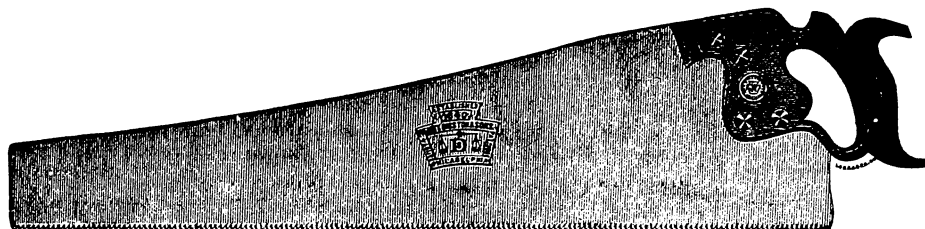
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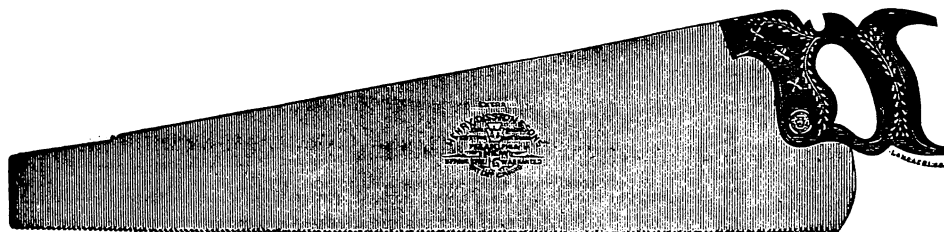
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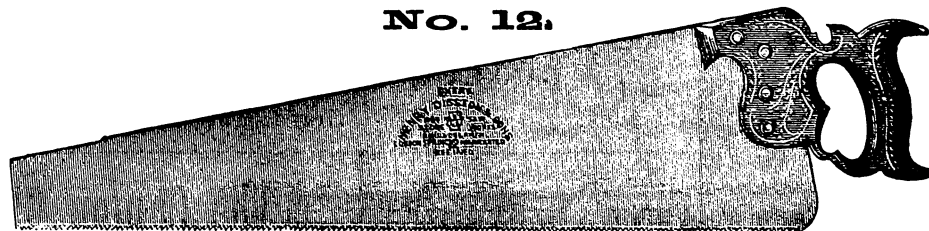
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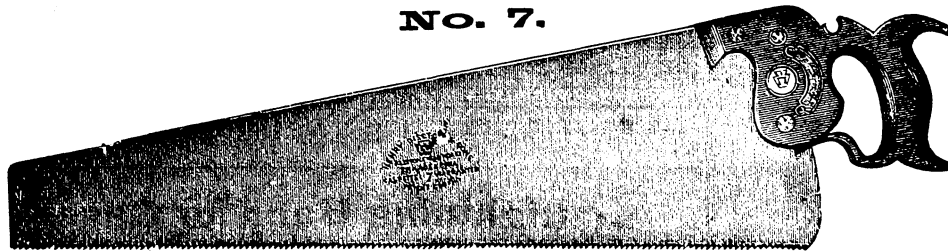
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Unequaled for accuracy and quick work in cutting square or at any angle. Saves breakages, &c.

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IMPROVED TRAMMEL RULE for Cutting Circles
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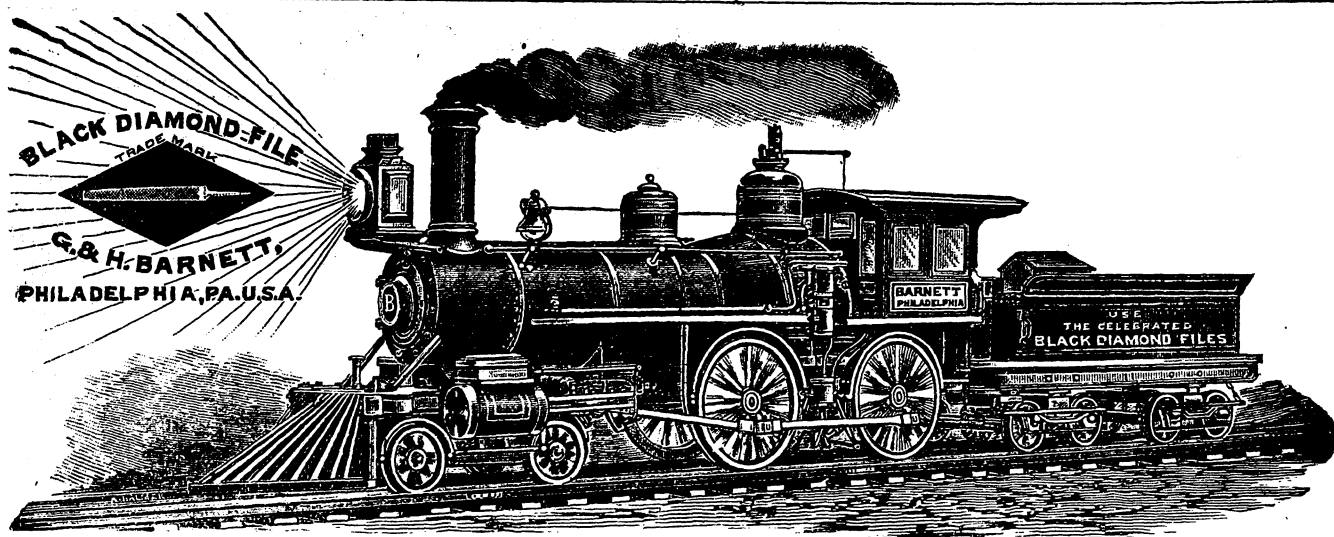
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Pliers for cutting wire, 50 cents extra.
No. 1 for cases under 300 or 400 pounds, and No. 2 for all heavier cases.

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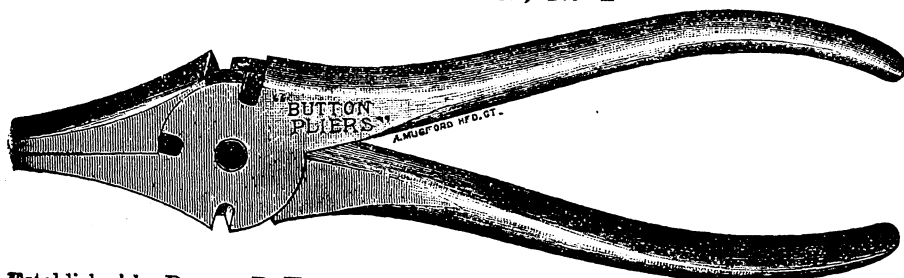
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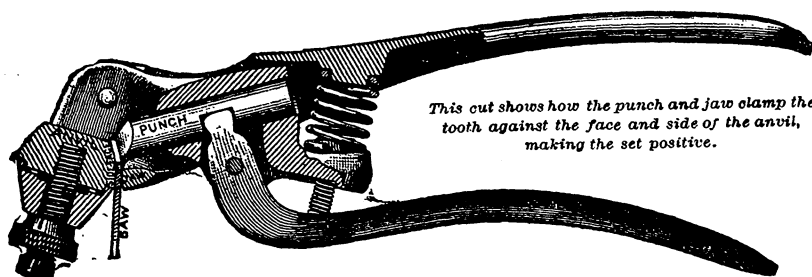
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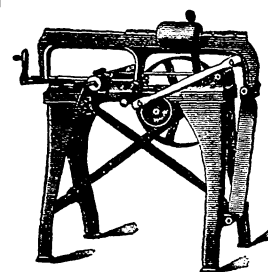
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Cuts off any size or Shape of Metal :
Up to 4½
Inches

No skill required to run it. When bar is cut off the machine automatically lifts the saw from the work and stops.

The pressure on the saw is much greater on the forward stroke than on the return.

THIS IS THE MOST PRACTICAL MACHINE FOR THE PURPOSE ever offered to the trade.

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Made with cutters of best steel.

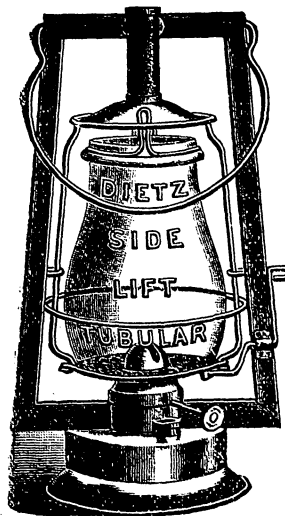
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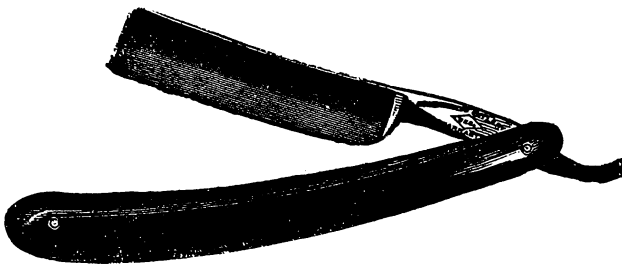
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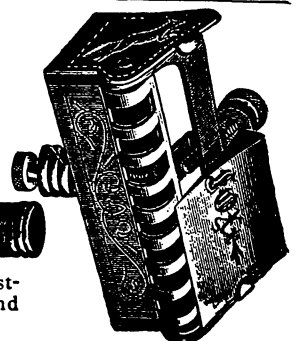
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 Is the finest and most practical in the world.
EVERY MAN HIS OWN BARBER.



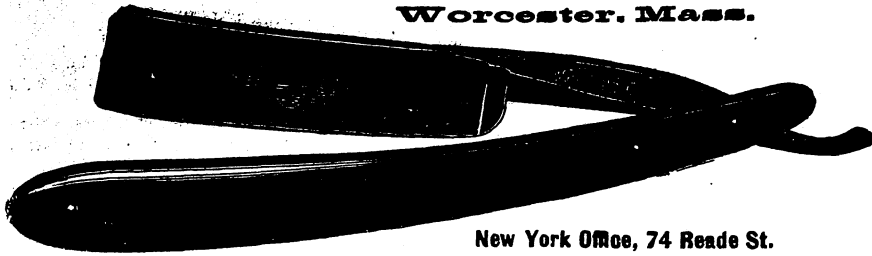
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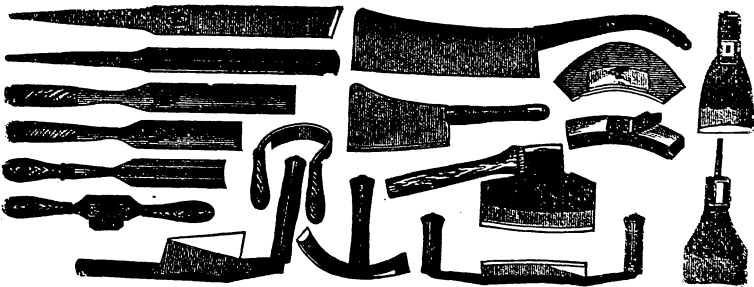
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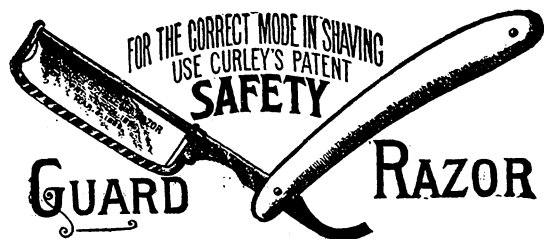
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THIS improvement permits CORRECT SHAVING, therefore no irritation is caused, and the most inexperienced can shave with perfect safety.

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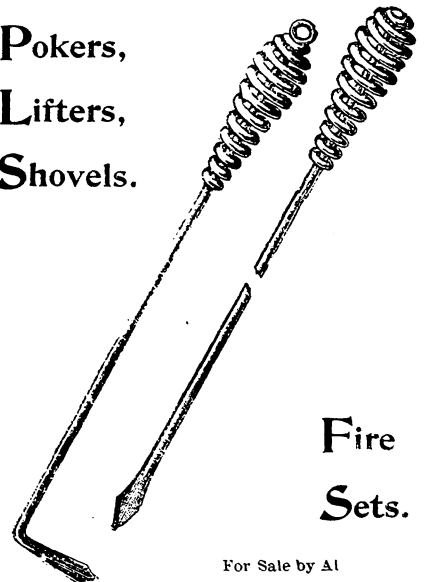
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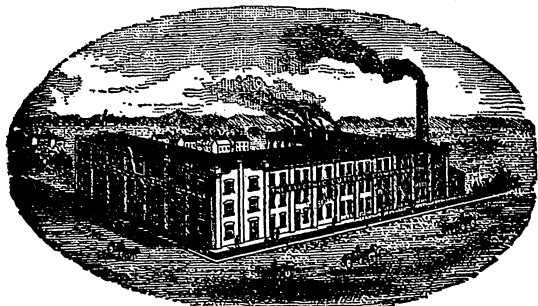
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Knives or Razors,

SEND TO
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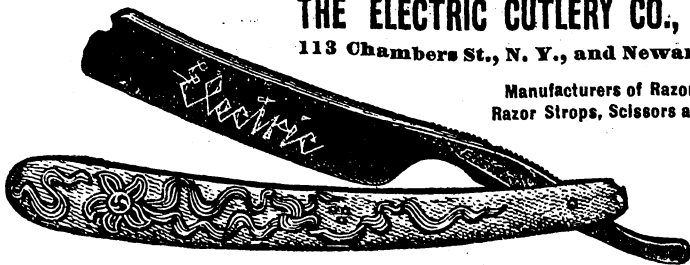
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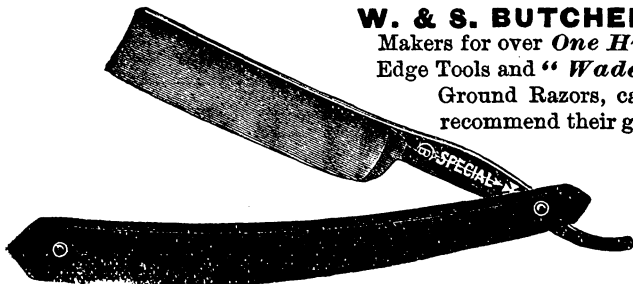
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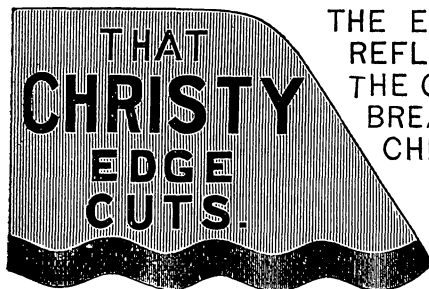
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THE CHRISTY BREAD KNIFE HAS THIS EDGE AND IS THE ONLY
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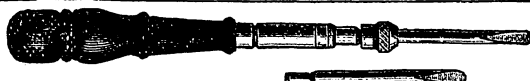
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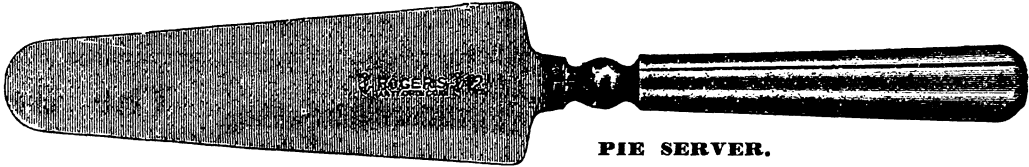


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THAN THE



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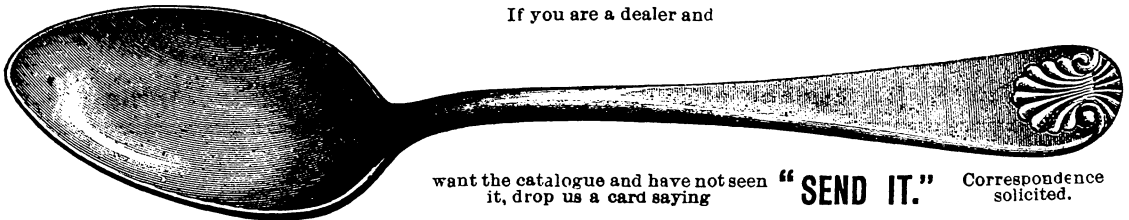
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NEW CATALOGUE FOR THE ASKING.

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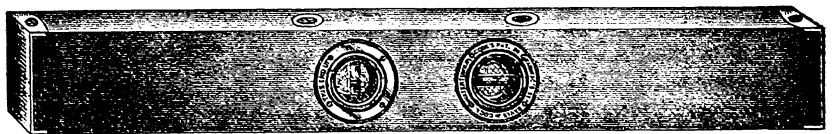
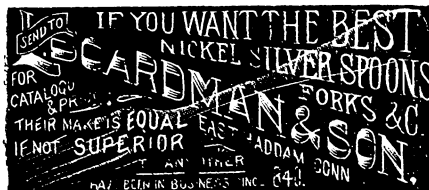
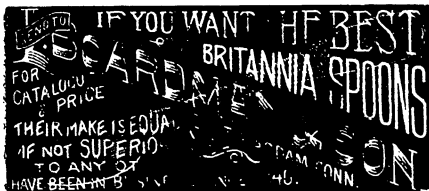
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Cork-Screw Novelties.
Cut Worm Cork-Screws
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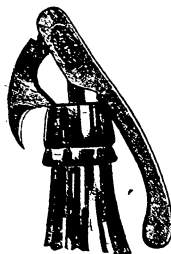


FIG. 8. Showing Davis cork-screw and fulcrum in position to pull cork.

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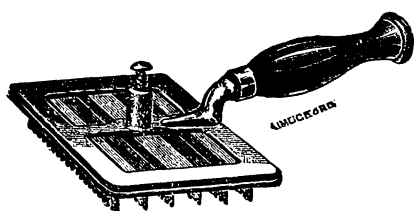


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SELLS AT SIGHT.



Wanted by Every Housekeeper.
Cottner's Pat. Dipper and Cup Handle.
Is the handiest thing out. With it a dipper can be made of a common glass, a tea cup, or a granite ware cup. The glass or cup can be securely attached to the handle or removed in a moment. The handle is very durable, and so cheap that they will sell at sight. For sale by all jobbers. Price \$7.20 per gross. If your jobber cannot supply you, send orders direct to
HOME NOVELTY MFG. CO., St. Louis, Mo.
Hatch Cutlery Co., 97 Chambers St., New York, Eastern Agts.

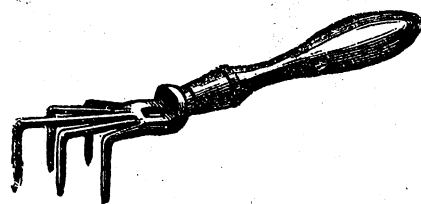


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Self-Cleaning Curry Comb.

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Send for full Catalogue and Prices.



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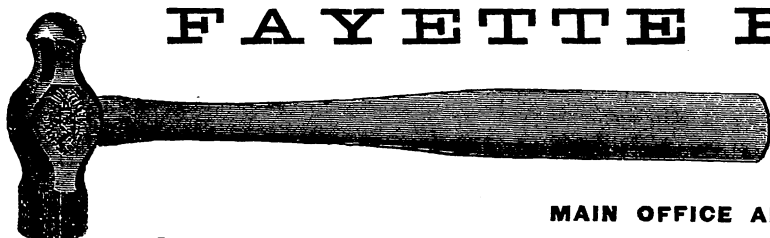
The cut represents the exact size of 6/0.

Thirteen Sizes made, 6/0 being the Largest.

**The Bridgeport
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Chain, made into Halters
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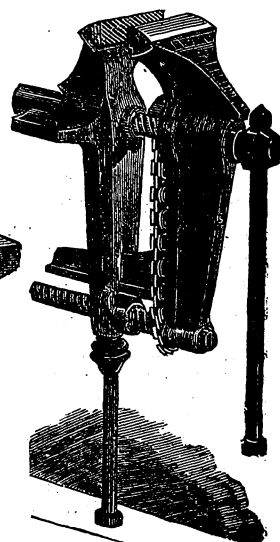
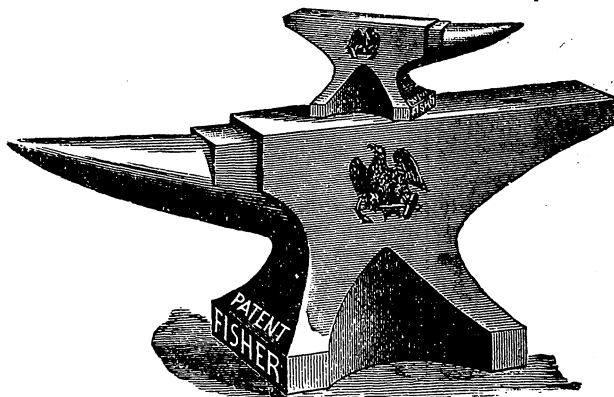
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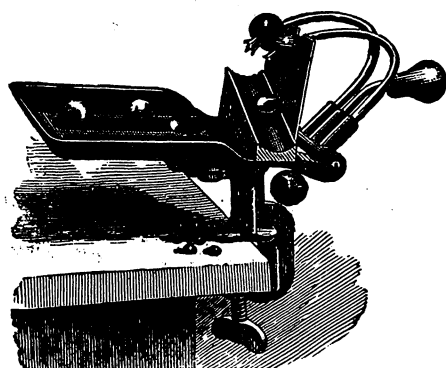
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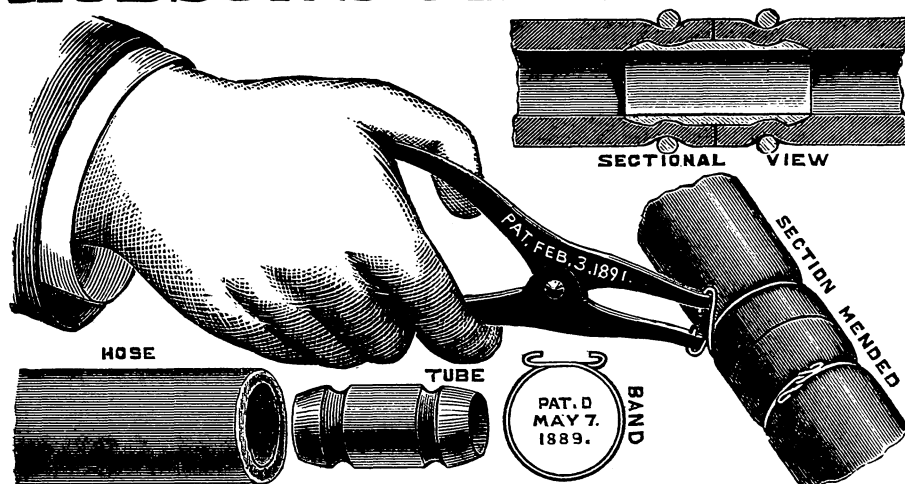
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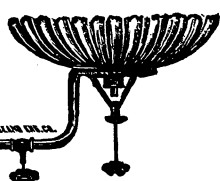
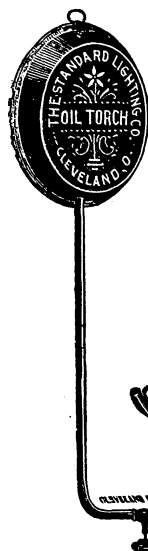
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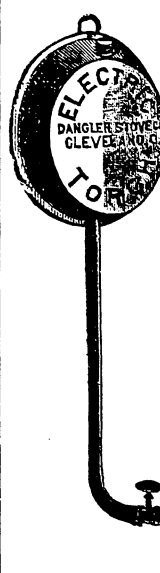


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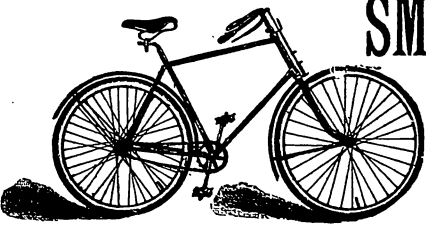
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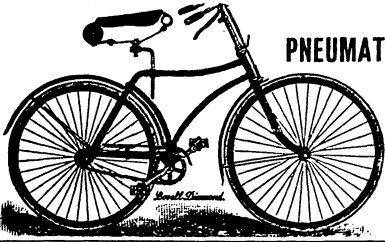
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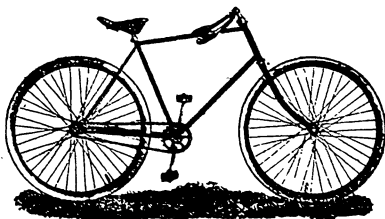
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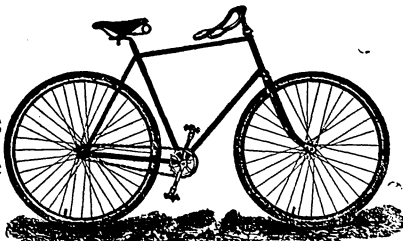
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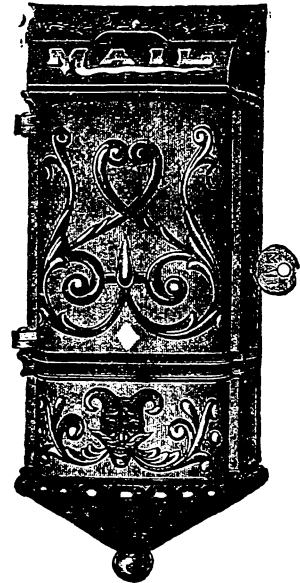
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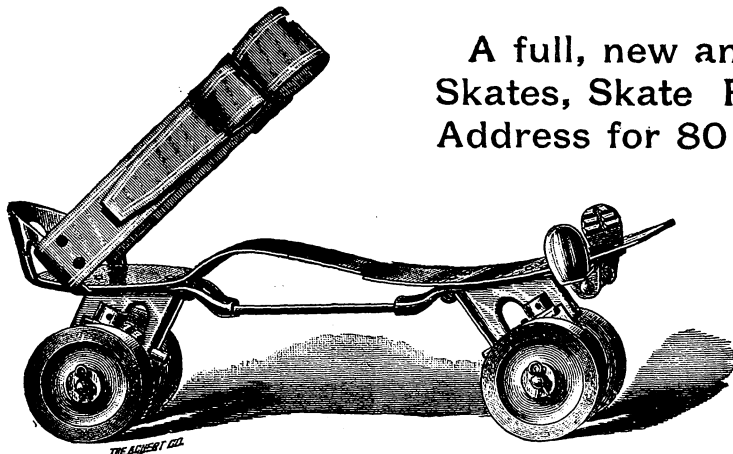
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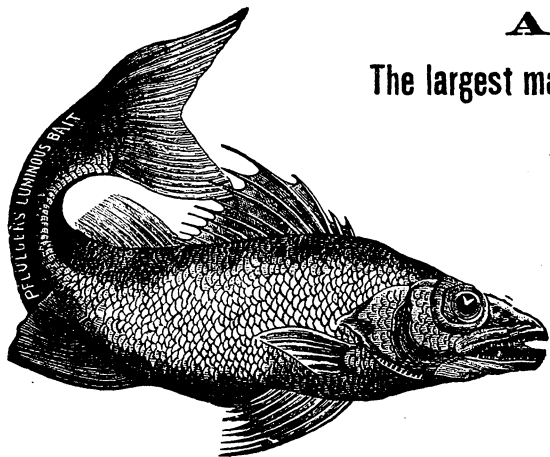
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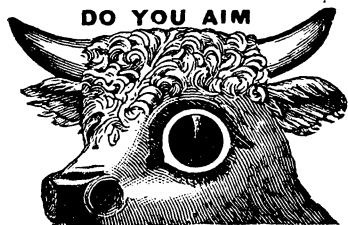
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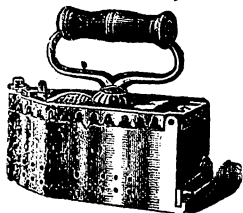
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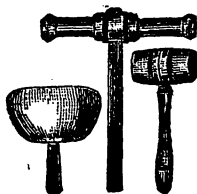
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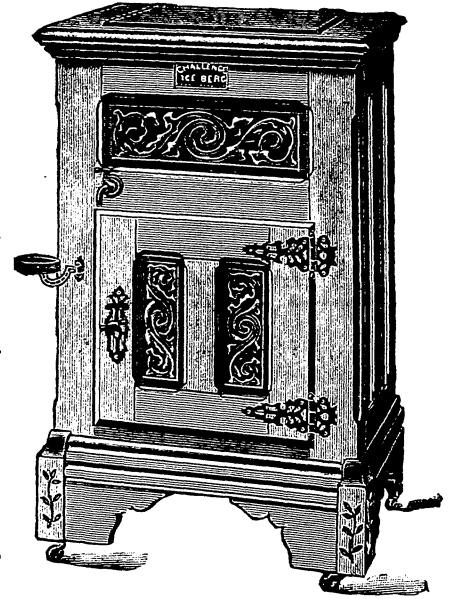
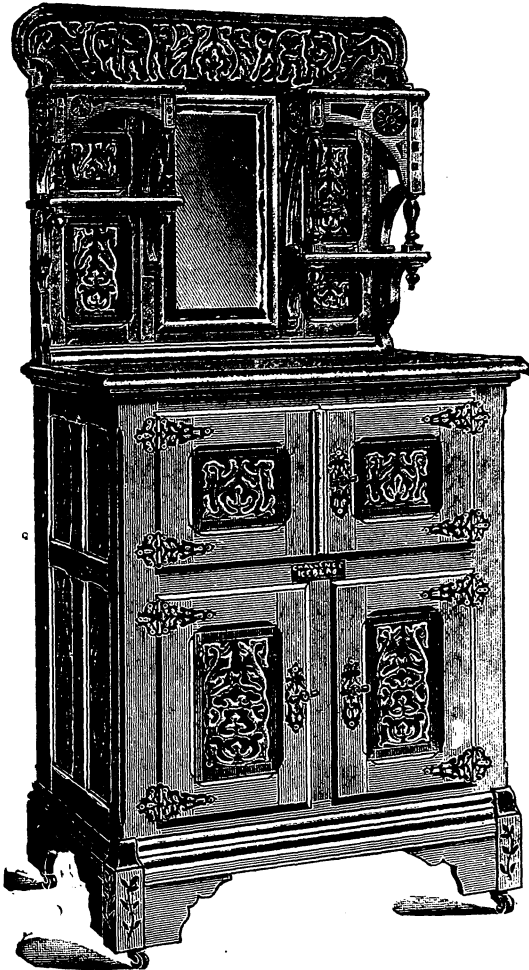
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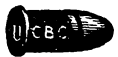
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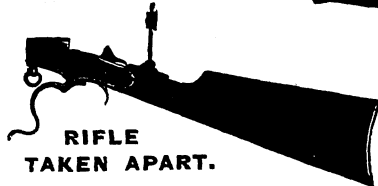
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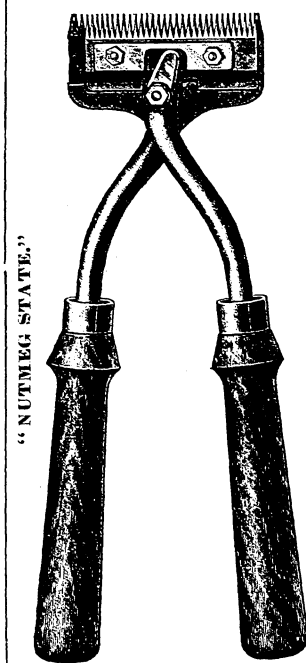
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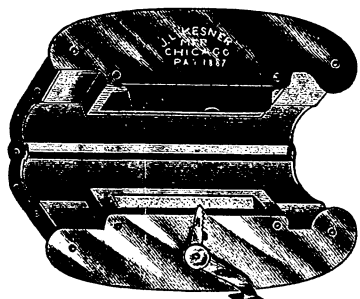
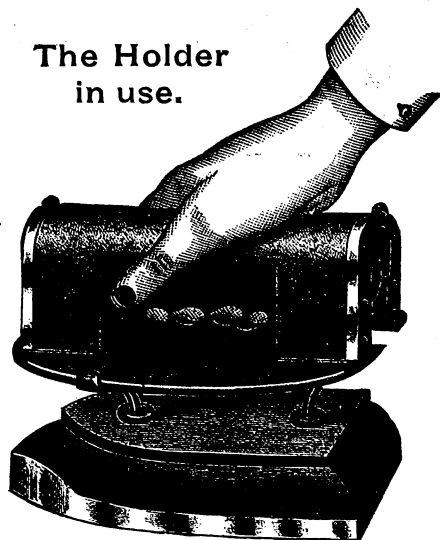
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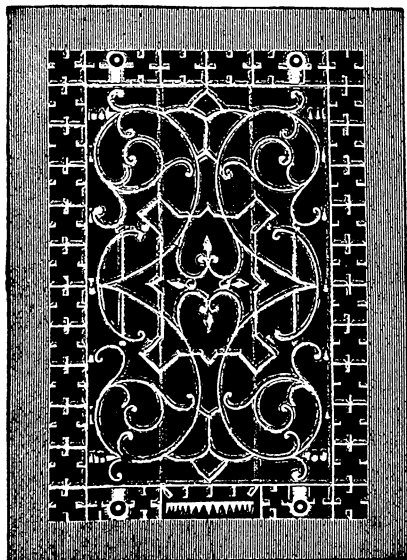
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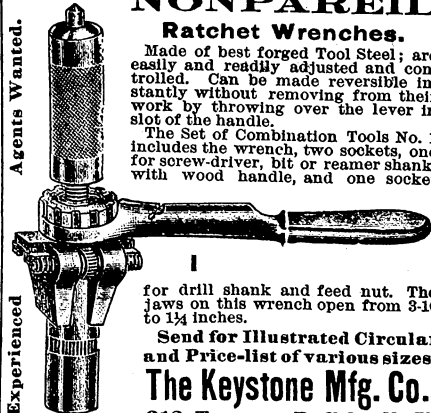
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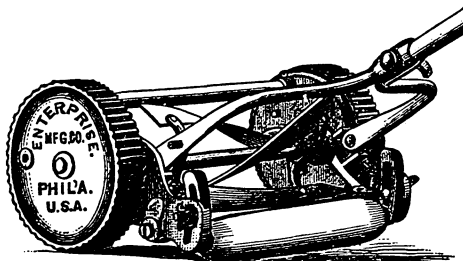
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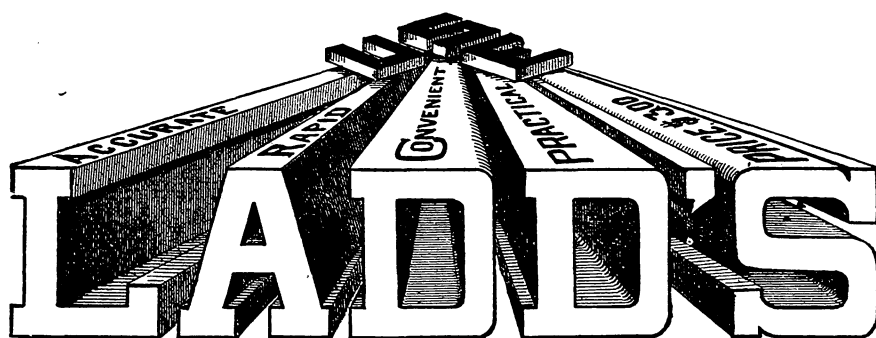
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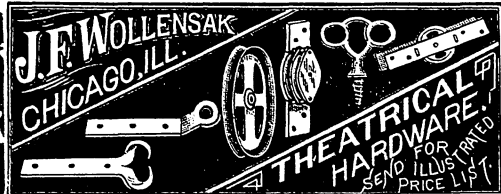
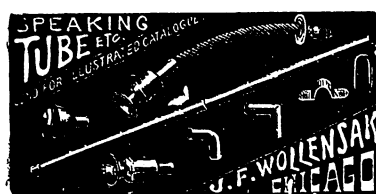
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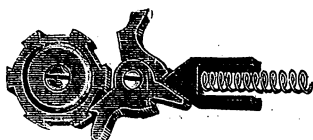
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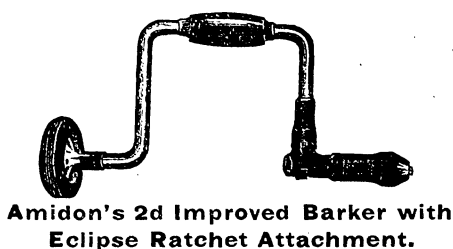
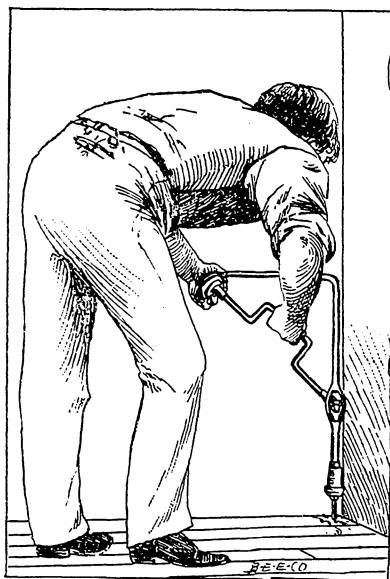
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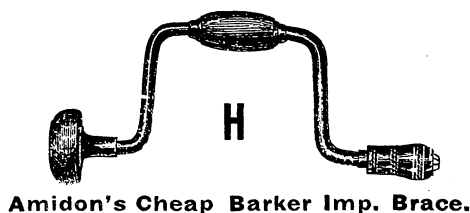
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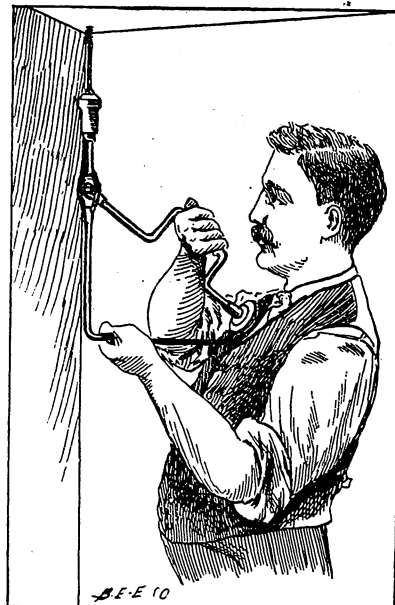
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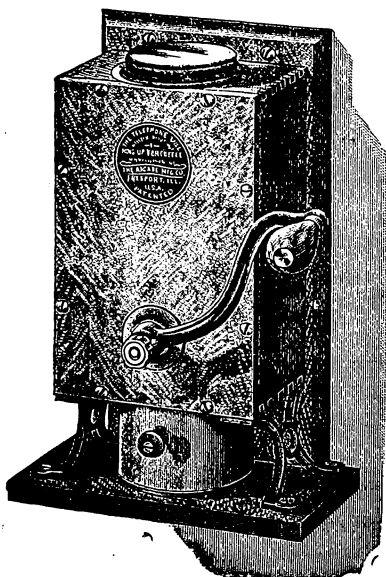


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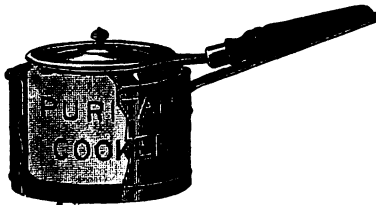
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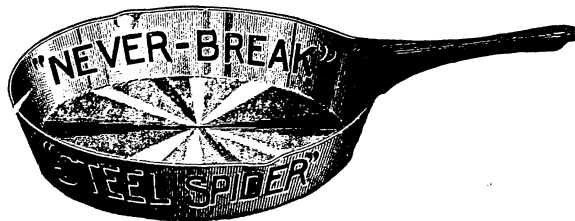
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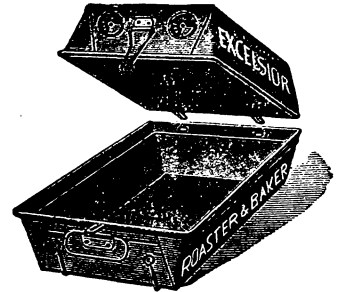


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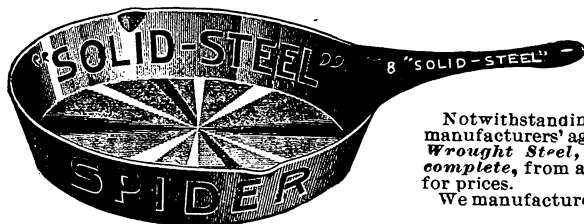
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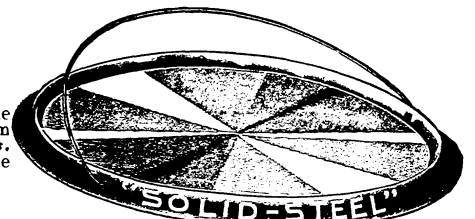
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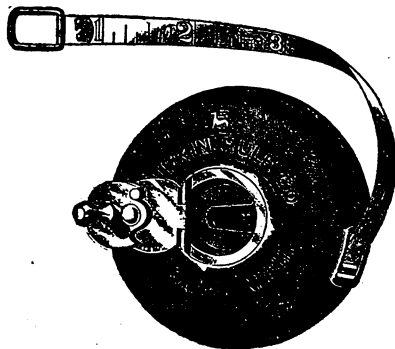
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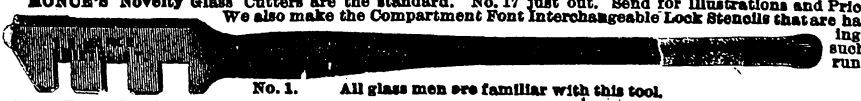
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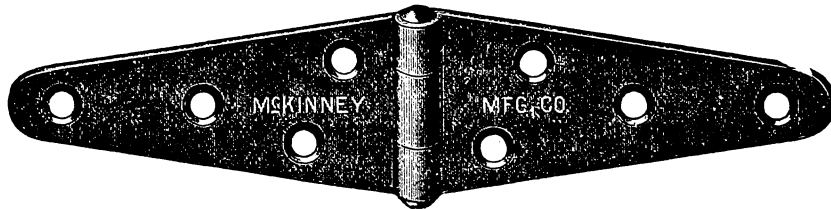


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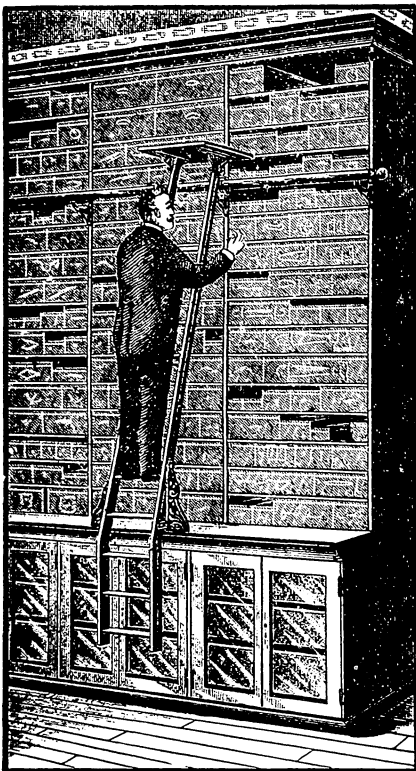
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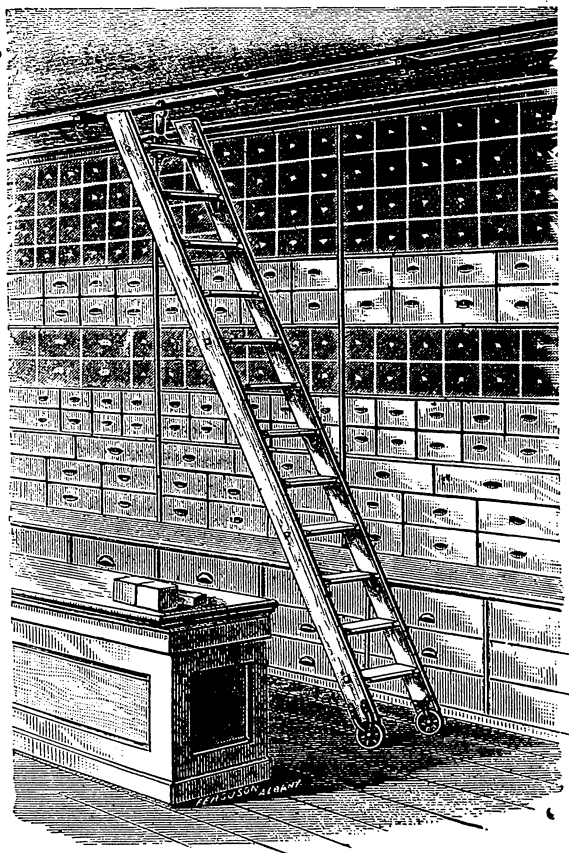


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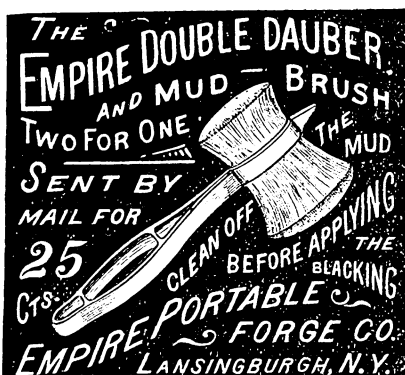


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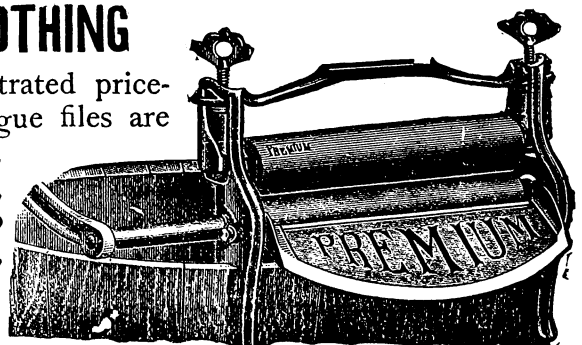
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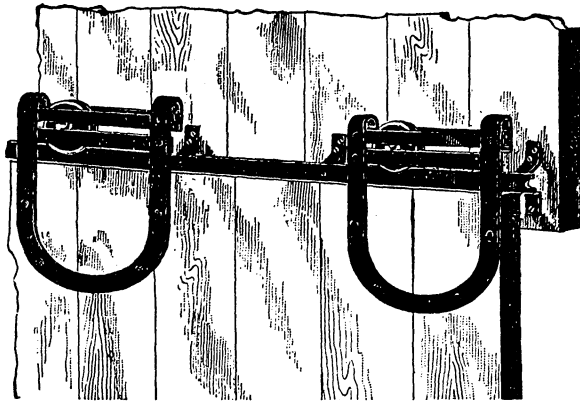
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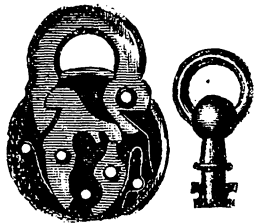
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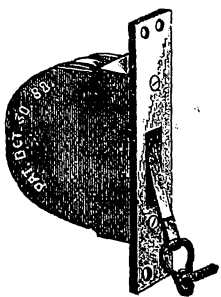
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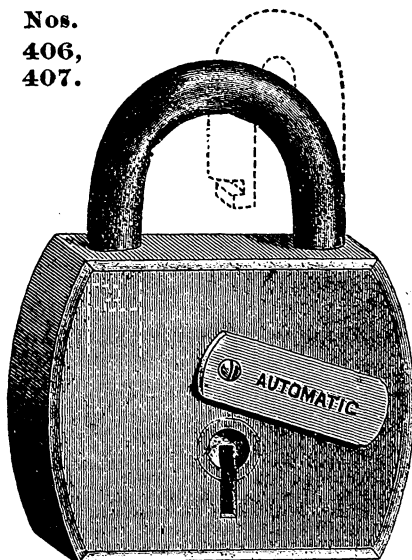
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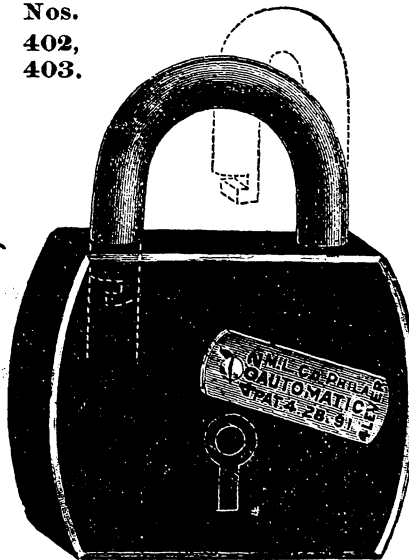
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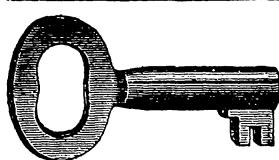
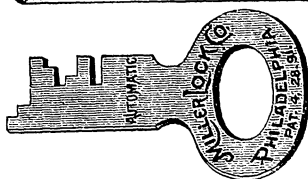
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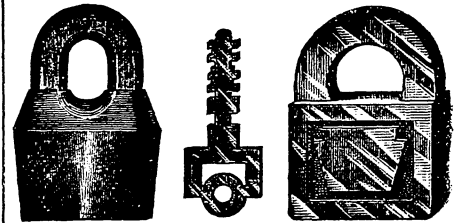
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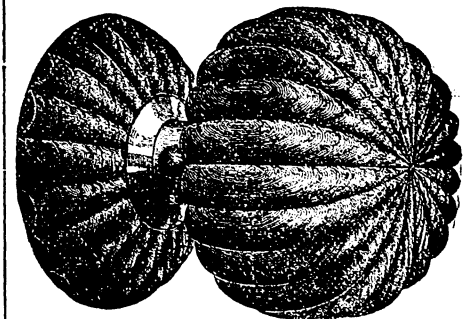
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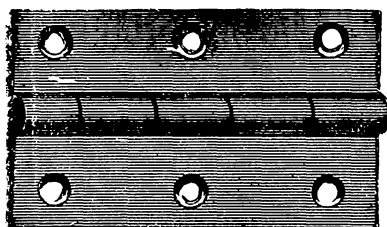
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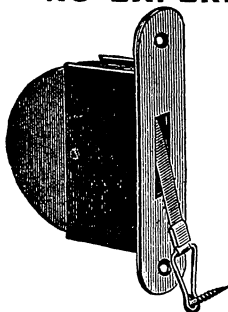
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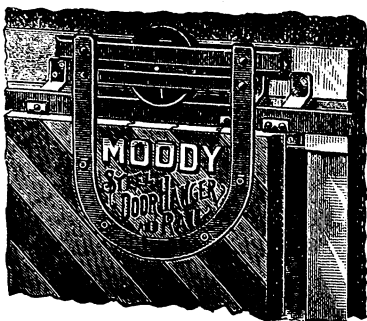
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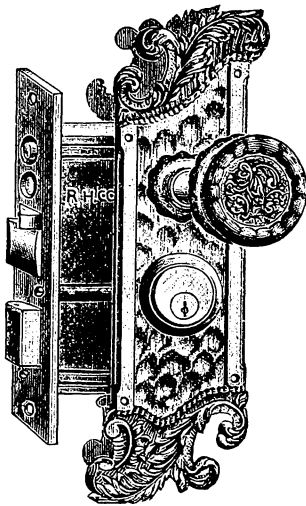
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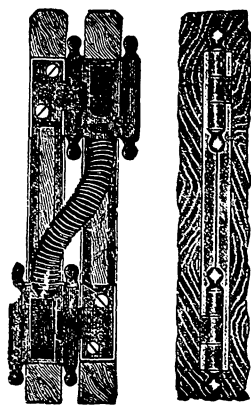


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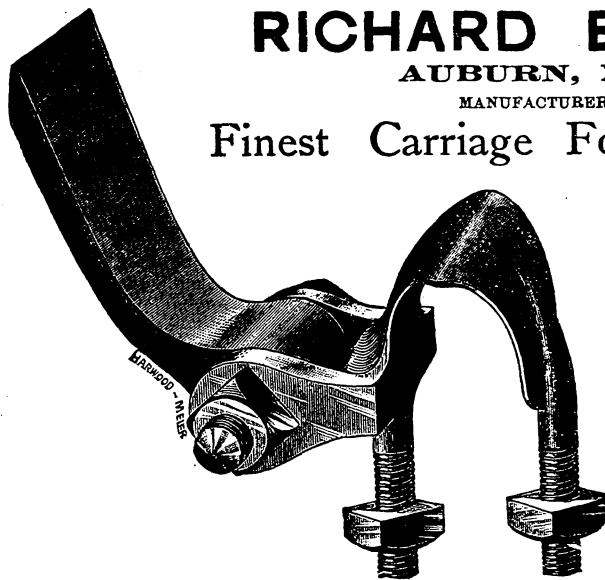
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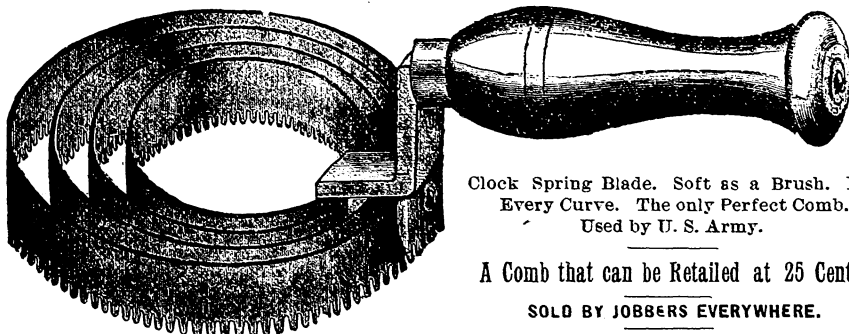


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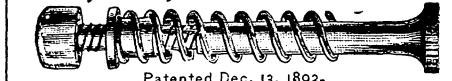
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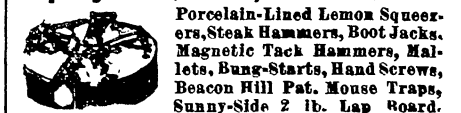
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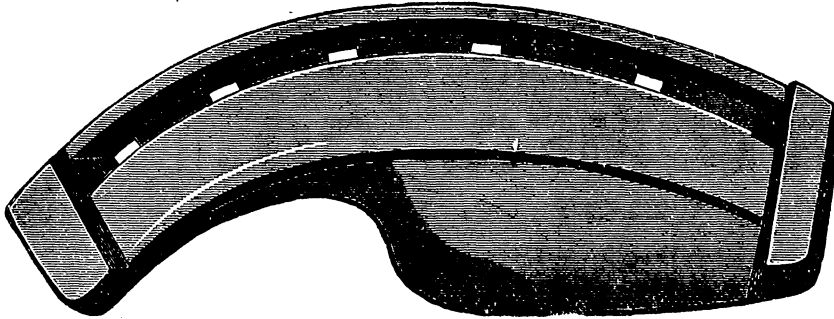
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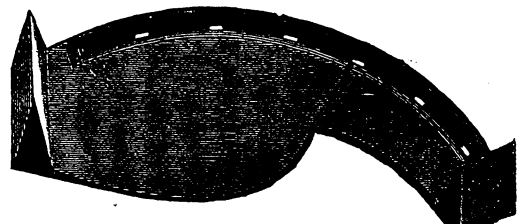
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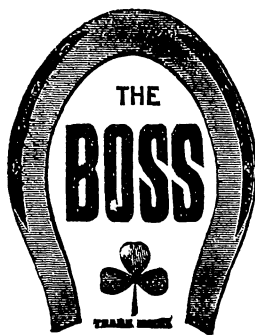
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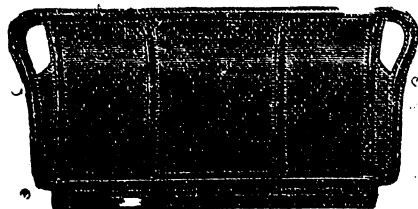
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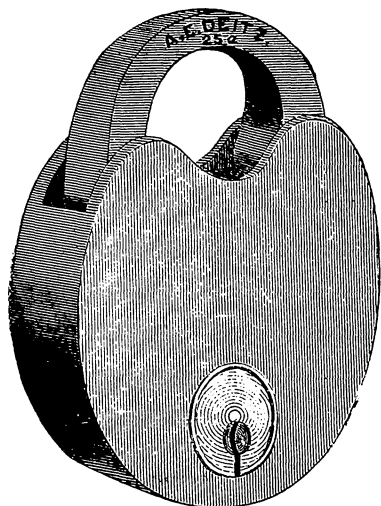


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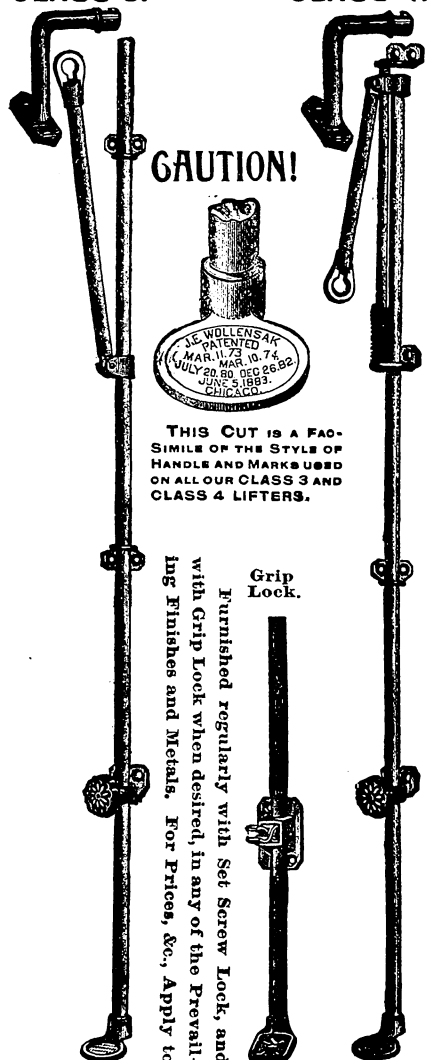
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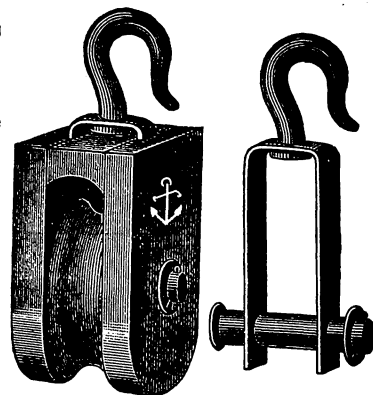
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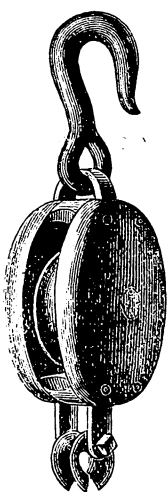
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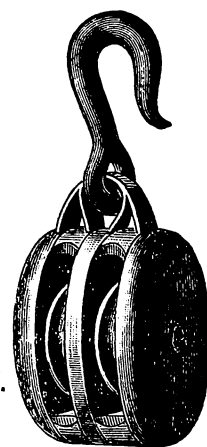
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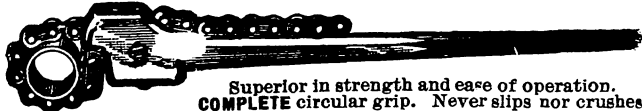
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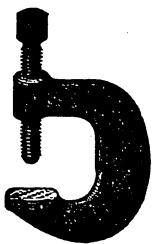
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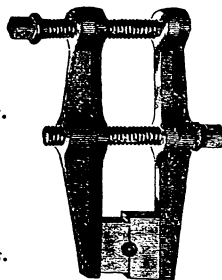


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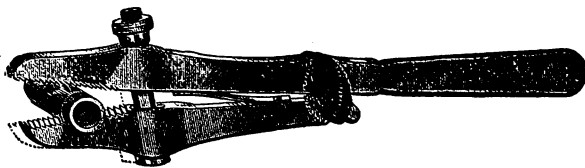
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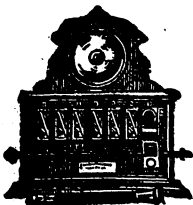


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The most Effective, Reliable and Perfect Wrench in the market.

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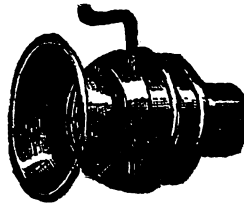
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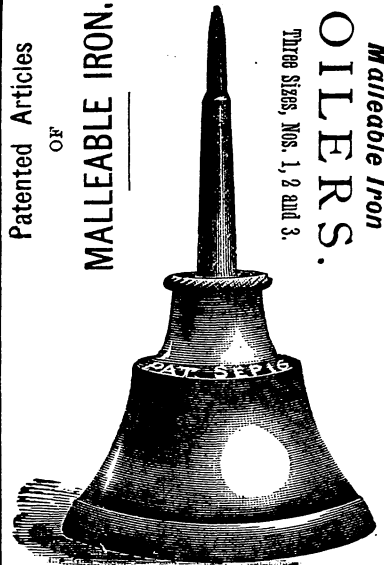
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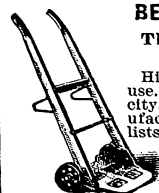
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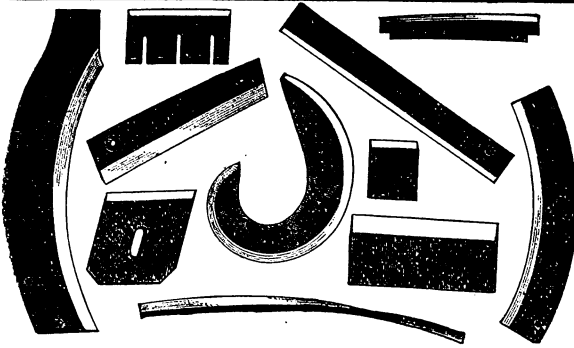
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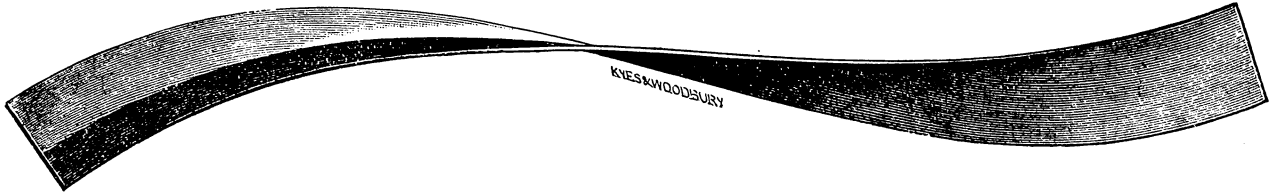
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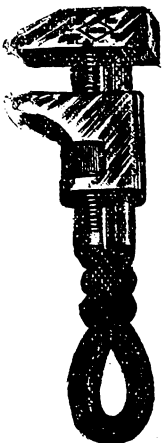
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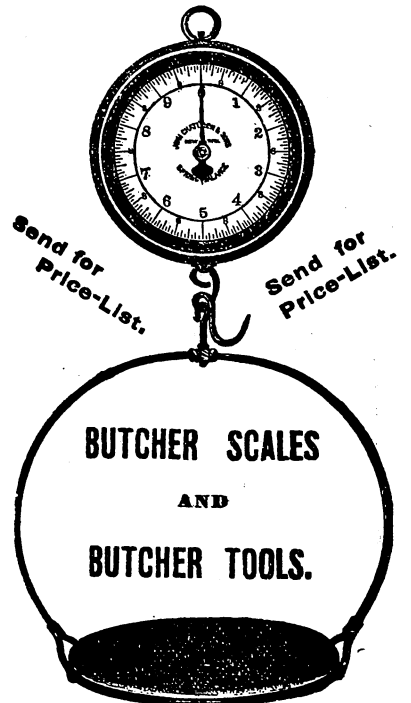


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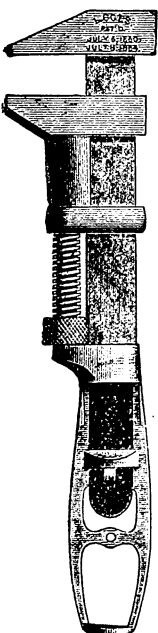


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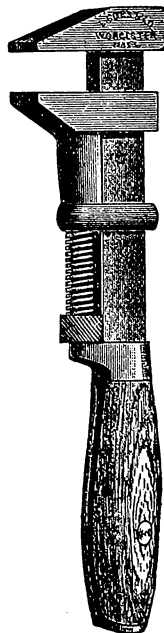
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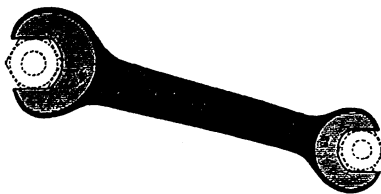
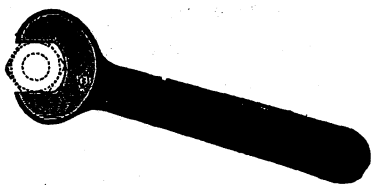
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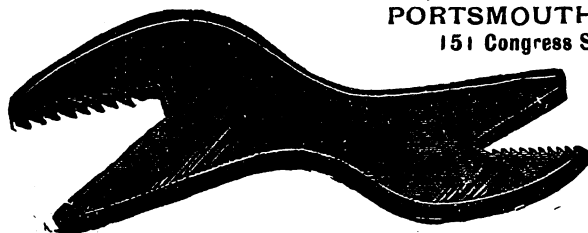
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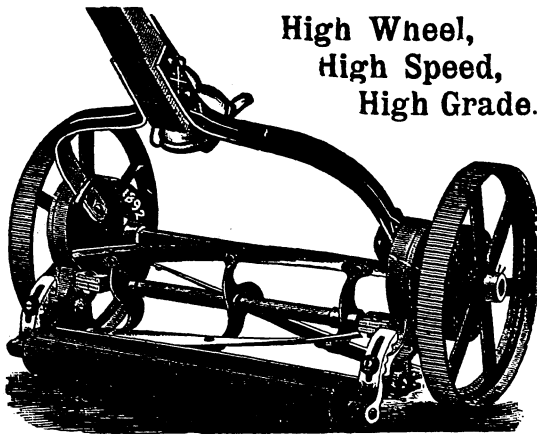
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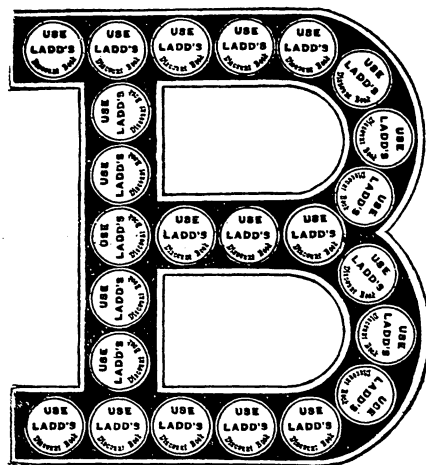
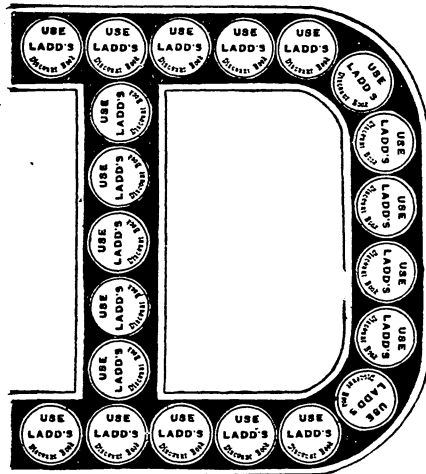
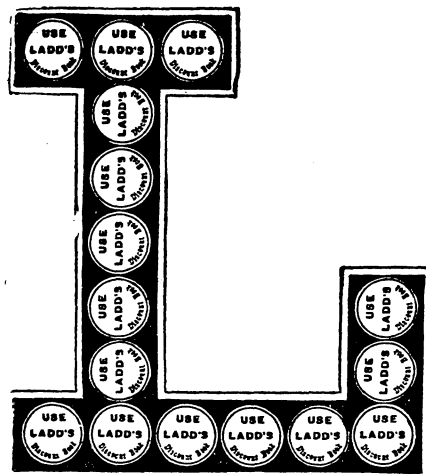
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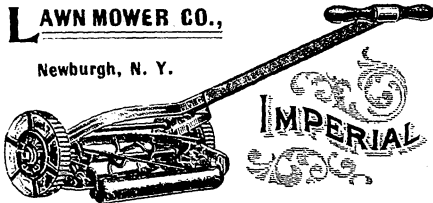
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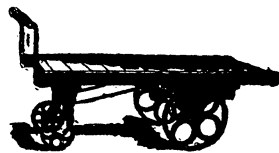
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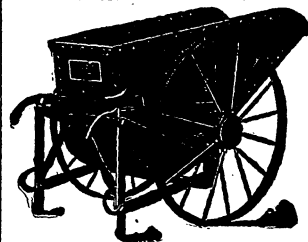
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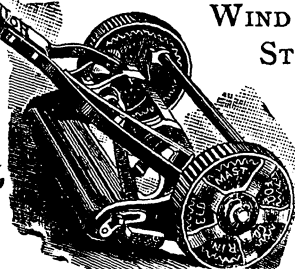
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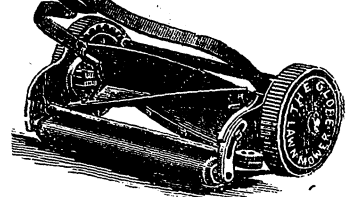
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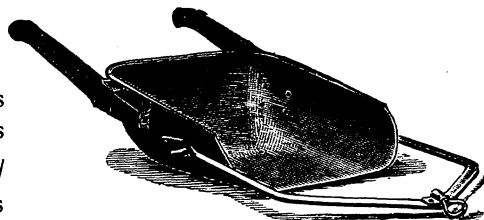
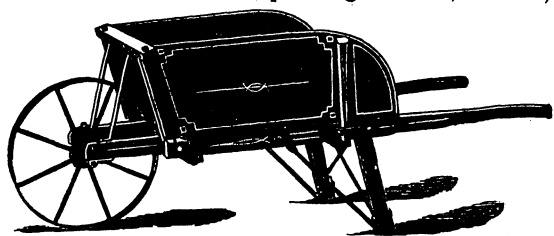


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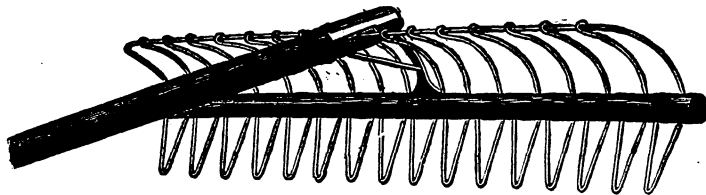


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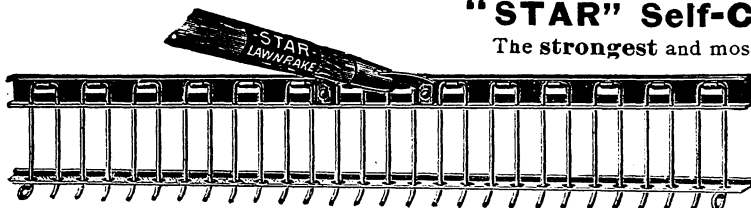
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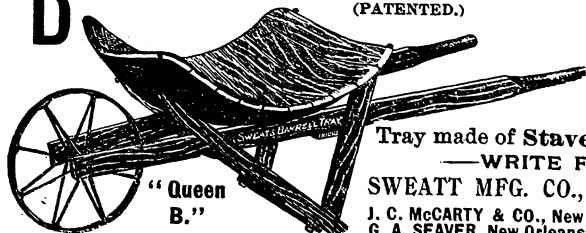


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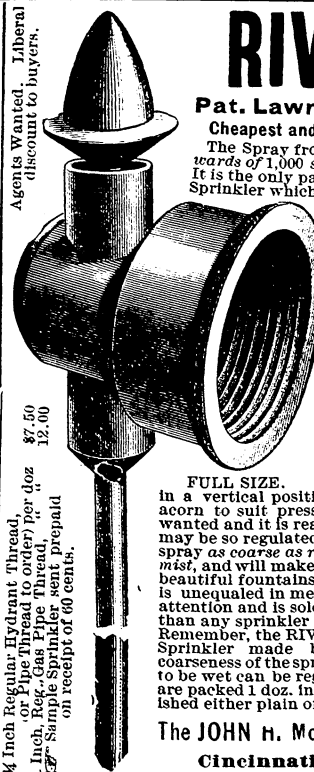
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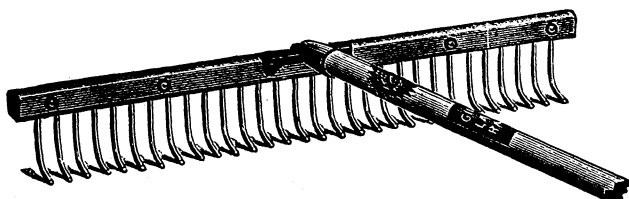
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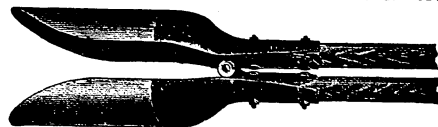


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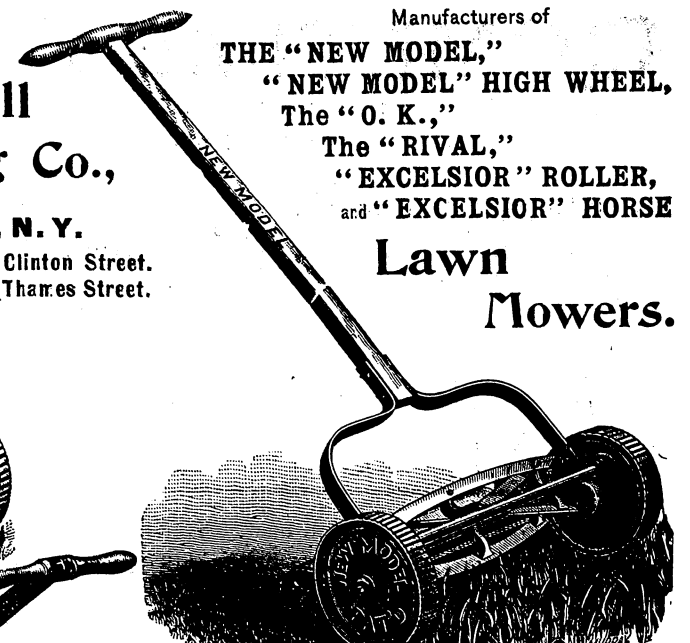
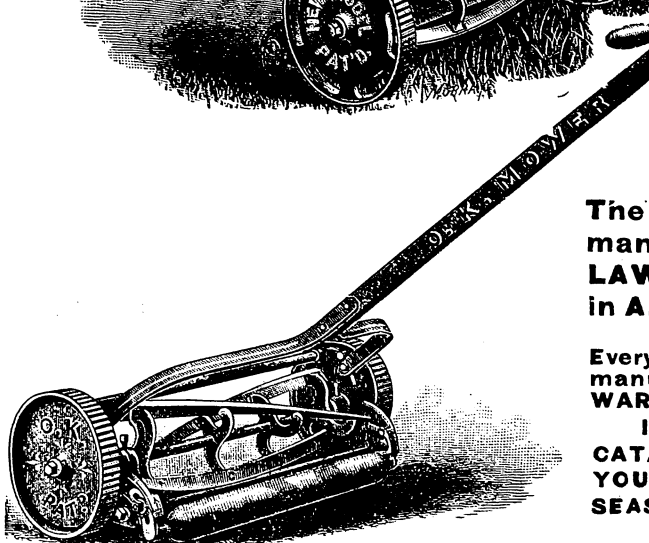
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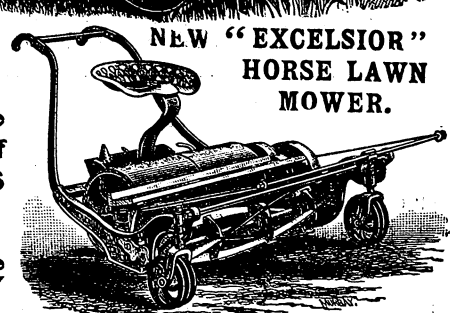
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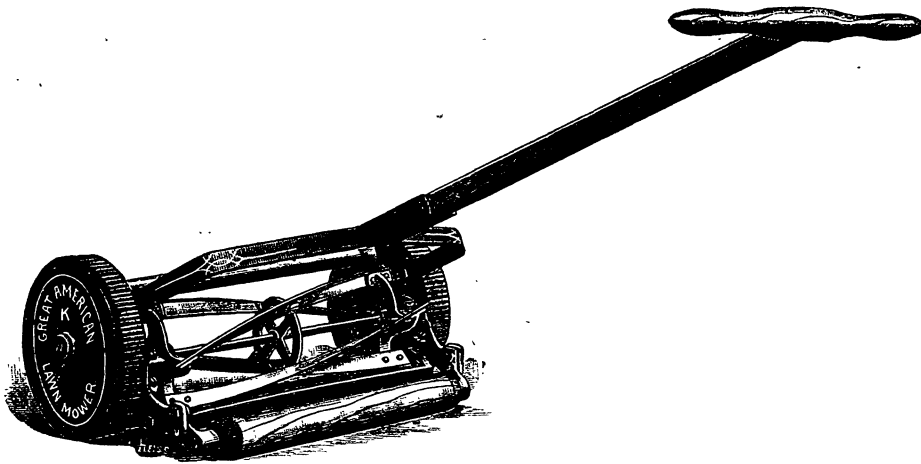



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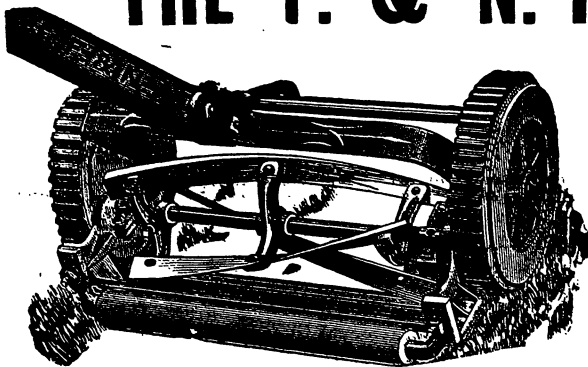
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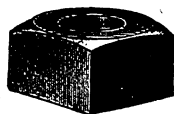
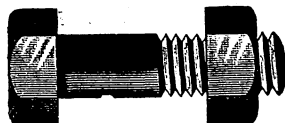
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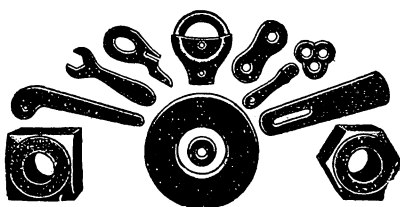
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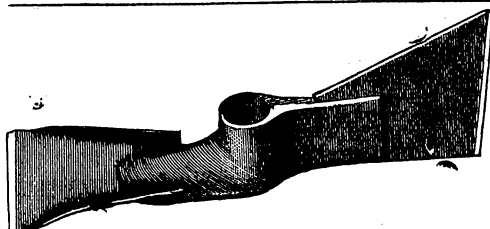
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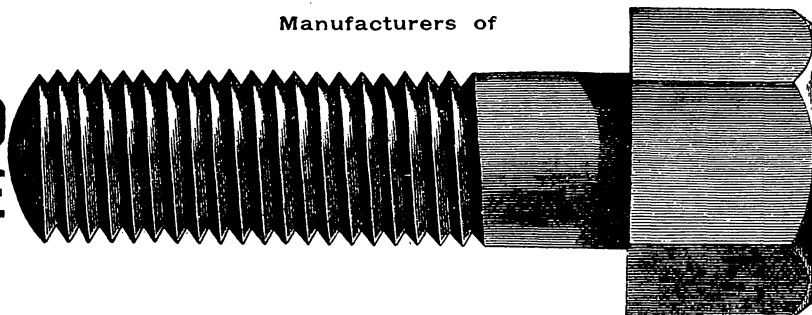
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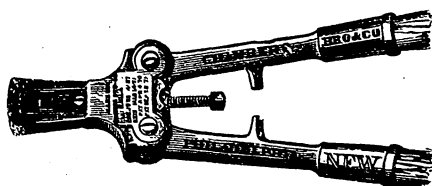
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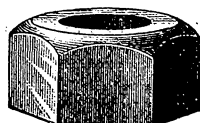
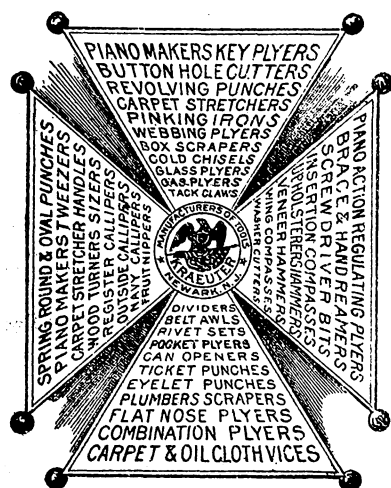
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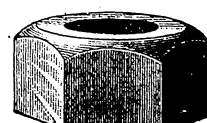
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Consolidated Steel & Wire Co., St. Louis, Mo.
Gaudier Steel Dept. of Cambria Iron Co., Johnstown, Pa.
Indiana Wire Fence Co., Crawfordsville, Ind.
Kilmer Mfg. Co., Newburg, N. Y.
Ludlow-Saylor Wire Co., St. Louis, Mo.
Wasburn & Moen Mfg. Co., Worcester.
- Bar Iron, Manufacturers of.**
Atna Iron & Steel Co., Bridgeport, O.
Allentown Rolling Mill, Philadelphia.
Burden Iron Co., Troy, N. Y.
Montour Iron & Steel Co., Danville, Pa.
Mahoning Valley Iron Co., Youngstown, Ohio.
Sternbergh, J. B. & Son, Reading, Pa.
- Barrel Swings.**
Leavitt Machine Co., Orange, Mass.
- Bellevue, Manufacturers of.**
Bullock Bellow Co., Cleveland, O.
Scott, Geo. M., Chicago, Ill.
- Bells.**
Beyn Bros. Mfg. Co., East Hampton.
- Belt Dressing.**
Jos. Dixon Crucible Co., Jersey City, N. J.
- Belt Friction.**
Bristols' Mfg. Co., Waterbury, Conn.
Chaffin Mfg. Co., Clevelana, Ohio.
Talcott, W. O., Providence, R. I.
- Belted, Makers of.**
Alexander Bros., 412 N. 3d., Philadelphia.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Engineering Co., Phila., Pa.
Main Belting Co., Philadelphia, Pa.
N. Y. Belting & Packing Co., Ltd., N. Y.
Roberts Mfg. Co., Pittsburgh, Pa.
Shultz Belting Co., St. Louis, Mo.
- Bicycles.**
Bigwell, Geo. R. Cycle Co., 310 W. 59th Street, N. Y.
Bingham, W. Co., Cleveland, Ohio.
Common Sense Bicycle Mfg. Co., Phila.
Coventry Machine Co., Ltd., Boston, Mass.
Hulbert Bros. & Co., 39 W. 23d St., N. Y.
Lovell, Jno. F. Arms Co., Boston, Mass.
Marble Cycle Mfg. Co., Plymouth, Ind.
Monarch Cycle Co., Chicago, Ill.
Pope Mfg. Co., Boston, Mass.
Read, Wm. & Sons, Boston, Mass.
Rouse, Hazard & Co., Peoria, Ill.
Western Wheel Works, Chicago, Ill.
- Bits and Braces.**
Am. Bit Brace Co., Buffalo, N. Y.
Bridgeport Gun Implement Co., 313 8th Broadway, N. Y.
Graham Jno. H. & Co., 113 Chambers St., N. Y.
Jennings, C. E. & Co., 97 Chambers, N. Y.
- Blocks, Tackle, Makers of.**
Boston & Lockport Block Co., Boston, Mass.
and Lockport, N. Y.
Cleveland Block Co., Cleveland, O.
Fulton Iron & Engine Works, Detroit, Mich.
Shubert & Cottingham, Philadelphia, Pa.
- Toledo Block Works** Toledo, O.
- Blockers.**
Buffalo Forge Co., Buffalo, N. Y.
- Champion Blower & Forge Co., Lancaster, Pa.**
Sturtevant, B. F. & Co., Boston, Mass.
- Seller Makers' Rolls.**
New Doty Mfg. Co., Janesville, Wis.
- Seller Plates.**
Carbon Steel Co., Pittsburgh, Pa.
McLain, Wm. & sons, Reading, Pa.
Lukens Iron & Steel Co., Coatsville, O.
Pottstown Iron Co., Pottstown, Pa.
- Sellers, Copper.**
Randolph & Clowes, Waterbury, Conn.
- Sellers, Steam.**
Babcock & Wilcox Co., 30 Cortlandt, Edge Moor Iron Co., Wilmington.
Harrison Safety Boiler Wks., Phila., Pa.
Phoenix Iron Works Co., Meadville, Pa.
Pollock, W. B. & Co., Youngstown, O.
Southward Fdy. & Mch. Co., Phila., Pa.
Wetherill, Robt. & Co., Chester, Pa.
- Solt Cutters.**
Chambers Bros. Co., Philadelphia.
Howard Iron Works, Buffalo, N. Y.
Wells Bros. Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Books.**
Lamberson, B., Portland, Ore.
Marine Review, Cleveland, Ohio.
Williams, David, 902 Park Ave., N. Y.
Wolcott & West, Syracuse, N. Y.
- Box Bander.**
Goodell & Harding, Burlington, Vt.
- Boxes, Hd. W. Shell, &c.**
Green, A. J., 22 Park Place, N. Y.
Jesse & Co., Philadelphia, Pa.
- Box Straps and Corners.**
Buffalo Specialty Mfg. Co., Buffalo, N. Y.
- Brake Shoes.**
Sargent Co., Chicago, Ill.
- Brass, Manufacturers of.**
Ansonia Brass & Copper Co., N. Y.
Davol, John & Sons, 100 John, N. Y.
Holmes, Booth & Haydens, N. Y.
Plume & Atwood Mfg. Co., N. Y.
Randolph & Clowes, Waterbury, Conn.
Rome Brass and Copper Wks., Rome, N. Y.
Seovill Mfg. Co., Waterbury, Conn.
Waterbury Brass Co., 298 B'way, N. Y.
- Brass Butt Hinges.**
Tiebout, W. & J., 16 & 18 Chambers
- Brass Foundries.**
Best, Fox & Co., Pittsburgh, Pa.
Cramp, Wm. & Sons, 3 & E. 8. Co., Philadelphia, Pa.
Emory, P. P. Mfg. Co., Springfield, Mass.
Haight & Clark, Albany, N. Y.
Keys, W. W. & R. M. Co., Bridgeport, Conn.
North Bros. Mfg. Co., Phila., Pa.
Reeves, Paul S., Philadelphia, Pa.
Shaw, Luther & Son, Worcester, Mass.
- Brass Woods.**
Brass Goods Mfg. Co., 88 Chambers, Mass.
- Bread Knives.**
Christy Knife Co., Fremont, O.
- Bridge Builders.**
Berlin Iron Bridge Co., East Berlin, Ct.
Boston Bridge Works, Boston, Mass.
Wrought Iron Bridge Co., Canton, O.
- Bronze (Tobin).**
Ansonia Brass & Copper Co., 19-26 Cliff Street, N. Y.
- Builders' Hardware.**
Deitz, A. E., 97 Chambers St., N. Y.
Reading Hd. Co., Reading, Pa.
Yale & Towne, N. Y.
- Butcher and Shoe Knives, Manufacturers of.**
Goodell Co., Antrim, N. H.
Wilson, John, Sheffield, England.
- Butts and Hinges.**
McKinney Mfg. Co., Alleghany, Pa.
Saw Machine Co., Montpelier, Vt.
Stanley Works, New Britain, Conn.
Tiebout, W. & J., 16 Chambers, N. Y.
- Calipers and Dividers.**
J. Stevens Arms and Tool Co., Chicopee Falls, Mass.
Scarrett, L. S., Athol, Mass.
- Cable Axes.**
Robt. A. P. & Co., Phila.
- Carboy Stands.**
Hillebrand & Wolf, Philadelphia, Pa.
- Car Wheels.**
Whitney, A. & Sons, Phila.
- Carriage Hardware, Makers of.**
Foster's Saddlery Works, Farmer, N. Y.
Eckman, Auburn, N. Y.
McKinnon Dash & Haw. Co., Ltd., Buffalo, N. Y.
Scranton Forging Co., Scranton, Pa.
Smith, H. D. & Co., Plantville, Conn.
Wilcox & Howe Co., Birmingham, Conn.
- Cartridge Reloading Tools.**
Ideal Mfg. Co., New Haven, Conn.
- Casters, Wheel, &c.**
Clark, G. P., Windsor Locks, Conn.
Tucker & Dorsey Mfg. Co., Indianapolis, Ind.
- Castings, Iron and Steel.**
Arcade Mfg. Co., Chicopee, Mass.
Arcade Malleable Iron Co., Worcester, Mass.
Aschman Steel Casting Co., Thurlow, Pa.
Booth, The Lloyd, Co., Youngstown, O.
Burgess & Loxley, Buffalo, N. Y.
The Burr & Louston Co., Brooklyn, N. Y.
Cable Steel—Cambria Iron Co., Johnstown, Pa.
Cheney, S. & Son, Manlius, N. Y.
Chester Steel Casting Co., Phila.
Chrome Steel Works, Brooklyn, N. Y.
Ette & Henger Mfg. Co., St. Louis, Mo.
Eureka Cast Steel Co., Chester, Pa.
Fagg, Stanley G. & Co., Phila.
Haight & Clark, Albany, N. Y.
Hammer & Co., Branford, Conn.
Herrick, J. A., 284 Pearl St., N. Y.
Johnson Foundry Co., Johnstown, Pa.
Johnson, I. G. & Co., Spruyn Duyn.
Mahoning F'dry & Mch. Co., Danville, Pa.
New Castle Steel Casting Co., New Castle, Pa.
- Northwest Malleable Iron Co., Milwaukee, Wis.**
Palmer & De Mory, Cleveland, O.
Passato Art Casting Co., Passalo, N. J.
Fenna, Diamond Drill & Mfg. Co., Chobora, Pa.
Frost & Letchworth, Buffalo, N. Y.
Sargent Co., Chicago, Ill.
Sessions Foundry Co., Bristol, Conn.
Shepard Haw. Co., Buffalo, N. Y.
Sickles, Harrison & Howard Iron Co., St. Louis, Mo.
Spencer's Fy. & Mfg. Co., Cleveland, O.
Standard Steel Casting Co., Thurlow, Pa.
Syracuse Steel Foundry, Syracuse, N. Y.
Taylor Iron & Steel Co., High Bridge, N. J.
Toten & Hogg Iron & Steel Fdry Co., Pittsburgh, Pa.
Trenton Iron Co., Trenton, N. J.
Union Mfg. Co., 108 Chambers St., N. Y.
West Coxackie Iron Fdry, Coxackie, N. Y.
Wetherill, Robt. & Co., Chester, Pa.
- Chains.**
Bradlee & Co., Philadelphia.
Bridgeport Chain Co., Bridgeport, Conn.
Link-Belt Engineering Co., Phila. a.
McKay, Jas. & Co., Pittsburgh, Pa.
- Cherry Stoners.**
Goodell Co., Antrim, N. H.
- Chimneys.**
Phila. Engineering Works, Phila., Pa.
- Chisels, Manufacturers of.**
Buck Bros., Millbury, Mass.
White, L. & J. Co., Buffalo, N. Y.
- Chucks.**
Cushman Chuck Co., Hartford, Conn.
Hogson & retus mfg. co., New Haven, Conn.
Horton, E. & Sons Co., Windsor Locks, Conn.
Smith & Egge Mfg. Co., Bridgeport.
Skinner Chuck Co., New Britain, Conn.
Union Mfg. Co., 108 Chambers, N. Y.
Whitlock, W. 132d St. & Park Ave., N. Y.
Wilton, D. E. Mach. Co., New London, Conn.
- Clamps.**
Hammer & Co., Branford, Conn.
Le Count, C. W., So. Norwalk, Conn.
- Clipping Machines.**
Hotchkiss, E. S., Bridgeport, Conn.
McCoy, Jos. F. & Co., 20 Warren St.
- Clock Springs, Manufacturers of.**
Haley Mfg. Co., Concord, N. H.
- Coal.**
Barns, C. K. & Co., Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.
- Coffee and Spice Mills.**
Arcade Mfg. Co., E. Freeport, Ill.
- Coke.**
Barns, C. K. & Co., Philadelphia, Pa.
Houston, O. B. & Co., Philadelphia, Pa.
Rainey, W. J., Cleveland, O.
Shill, Geo. H. & Co., Chicago, Ill.
Wistar, Francis, Philadelphia, Pa.
- Collections.**
Hardware Board of Trade (Limited) 4 & 6 Warren, N. Y.
- Condensers.**
Worthington, Henry R., 88 & 88 Liberty Street, N. Y.
- Conveying Machinery.**
Brown, Holsing & Conveying Machine Co., Cleveland, Ohio.
Jeffrey Mfg. Co., Columbus, O.
Link Belt Engineering Co., Phila., Pa.
- Copper.**
Ames Sword Co., Chicopee, Mass.
Barns, C. K. & Co., Phila., 19 and 21 Cliff, N. Y.
Hendricks Bros., 49 Cliff, N. Y.
New Haven Copper Co., 294 Pearl, N. Y.
Randolph & Clowes, Waterbury, Conn.
Rome Brass and Copper Works, Rome, N. Y.
Wistar, Francis, Philadelphia, Pa.
- Coppersmith.**
Emory, P. P. Mfg. Co., Springfield, Mass.
- Cordage.**
Elizabethport Cordage Co., 46 South, Samson Cordage Works, Boston, Mass.
Travers Bros. Co., 107 Duane St., N. Y.
- Cord Screws.**
Detroit Cork Screw Co., Detroit, Mich.
Williamson, C. T. Wire Novelty Co., Newark, N. J.
- Corrugated Furnaces.**
Continental Iron Wks., Brooklyn, N. Y.
- Corrugated Iron.**
Chicago Bridge Co., Cambridge, O.
Cincinnati Corrugating Co., Piqua, O.
Miller, Jas. A. & Bro., Chicago, Ill.
Moseley Iron Bridge & Roof Co., 5 Day, N. Y.
- Counting Machines.**
Osborn, G. Edw. & Co., New Haven, Ct.
- Coupling.**
Almond, T. R., Brooklyn, N. Y.
- Coverings, Roller and Pipe.**
Johns, H. W. Mfg. Co., 87 Maiden Lane.
- Cranes.**
Allentown Rolling Mills, Allentown, Pa.
Detroit Foundry Equipment Co., Detroit, Mich.
Maris & Beekley, Philadelphia, Pa.
Ridgway, Craig & Sons, Coatsville, Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.
Yale & Towne Mfg. Co., Stamford, Conn.
- Cupolas, Hot-Blast.**
Byram & Co., Detroit, Mich.
Colliau, Victor, Detroit, Mich.
Detroit Fdry. & Equipment Co., Detroit, Mich.
- Curry Combs.**
Kohler, F. E. & Co., Canton, O.
Noyes, B. B. & Co., Greenfield, Mass.
Sorting Curry Comb Co., So. Bend, Ind.
- Cutlery Cases.**
Torrey, J. K. & Co., Worcester, Mass.
- Cutlery, Importers of.**
Gurney, Fred B., 115 Chambers St., N. Y.
Sickles, Sweet & Lyon, 35 Barclay, N. Y.
- Cutlery, Manufacturers of.**
Christy Knife Co., Fremont, O.
Curley, J. & Bro., 6 Warren St., N. Y.
Dane, Stoddard & Kendall, Boston, Mass.
Electric Cutlery Co., 118 Chambers, N. Y.
Goodell Co., Antrim, N. H.
Landers, Frary & Clark, New Britain, Conn.
Northampton Cutlery Co., Northampton, Mass.
Wilson, John, Sheffield, England.
- Cutting-off Tools.**
Am. Vending Mch. Co., 29 Murray, N. Y.
- Dies.**
Wilson, J. Fred, Worcester, Mass.
- Dipper Handles.**
Home Novelty Mfg. Co., St. Louis, Mo.
- Dog Collars.**
Chapman Mfg. Co., Meriden, Conn.
- Door Checks.**
Utility Door Check Co., Chicago, Ill.
- Door Knobs.**
Bardley, J. 149 & 151 Baxter St., N. Y.
- Drilling Machines.**
Brady Mfg. Co., Brooklyn, N. Y.
Buffalo Forge Co., Buffalo, N. Y.
Burnham, Geo. Co., Worcester, Mass.
Champion Blower and Forge Co., Lancaster, Pa.
Colburn, A. L., New Haven, Conn.
Clough, J. M., Tolland, Conn.
Dallert, Thos. H. & Co., Newadelpia.
Dwight Slate Machine Co., Hartford, Conn.
- Halsey, Jas. T., Philadelphia, Pa.**
Illinois Iron and Bolt Co., Carpentersville, Ill.
Norton & Jones Machine Tool Works, Plainville, Conn.
Quint, A. D., Hartford, Conn.
Sellers, Wm. & Co., Inc., Phila., Pa.
Sibley & Ware, So. Bend, Ind.
Sigourney Tool Co., Hartford, Conn.
Silver Mfg. Co., Salem, O.
Smith Friction Drill & Tool Co., Boston, Mass.
- Drop Forgings.**
Belden Mach. Co., New Haven, Conn.
Billings & Spencer Co., Hartford, Conn.
Boone, W. C. Mfg. Co., Boonton, N. J.
Eccles, Richard, Auburn, N. Y.
Herbrand Co., Fremont, O.
Horn Bros., 21 Elm, Brooklyn, E. D.
Miner & Peck Mfg. Co., New Haven, Conn.
Phila. Drop Forge Co., Philadelphia, Pa.
Scranton Forging Co., Scranton, Pa.
Spiers, J. C. & Co., Worcester, Mass.
Williams, J. H. & Co., Brooklyn, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Drop Presses.**
Bliss, E. W. & Co., Brooklyn, N. Y.
Crosby, G. A. & Co., Chicago, Ill.
Eaton, Geo. H. & Co., Boston, Mass.
Miner & Peck Mfg. Co., New Haven, Conn.
Stiles & Parker Press Co., Brooklyn, N. Y.
- Vulcan Iron Works, Chicago, Ill.**
Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.
- Dumie Walters.**
Storm Mfg. Co., Newark, N. J.
- Dynamite.**
New York Powder Co., 62 Liberty St., N. Y.
- Dynamos.**
O. & C. Electric Motor Co., 402 and 404 Greenwich St., N. Y.
Lovell Mfg. Co., Ltd., Erie, Pa.
Zucker & Levett Chemical Co., 10 14 Grand St., N. Y.
- Edge Tools, Makers of.**
Buck Irons, Millbury, Mass.
Butcher, W. & S., 135 Duane St., N. Y.
Buffalo Edge Tool Wks., Buffalo, N. Y.
Plumb, Fayette R., Philadelphia, Pa.
White, L. & J. Co., Buffalo, N. Y.
- Earth Batters.**
North Bros. Mfg. Co., Philadelphia.
- Electric Bells and Supplies.**
Ostrander, W. R. & Co., New York.
Wollensak, J. F., Chicago, Ill.
- Electric Dynamo Machines.**
Eddy Electric Mfg. Co., Windsor, Conn.
Electric Elevators.
Smith Hill Co., Quincy, Ill.
- Electric Welding.**
Thomson Electric Welding Co., Boston, Mass.
- Electro-Platers.**
Boardman, L. & Son, East Haddam, Ct.
- Elevators, Makers of.**
Link-Belt Engineering Co., Phila., Pa.
Moline Elevator Co., Moline, Ill.
Morse, Williams & Co., Phila., Pa.
Salem F'dry & Mch. Co., Salem, Mass.
- Emery and Emery Wheels.**
Bell, Geo. E., 36 John St., N. Y.
Grant Corundum Wheel Mfg. Co., Chester, Mass.
Hamden Emery and Corundum Co., Springfield, Mass.
Michigan Emery Wheel Co., Detroit, Mich.
N. Y. Belting & Packing Co., Ltd., N. Y.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Springfield Emery Wheel Mfg. Co., Bridgeport, Conn.
Walsham, Emery Wheel Co., Walsham, Mass.
- Enamels.**
Nubian Iron Enamel Co., Cragin, Ill.
- Engineers and Contractors.**
Alken Henry, Pittsburgh, Pa.
Artificial Gas Engineering Co., Pittsburgh, Pa.
Beady Mfg. Co., Brooklyn, N. Y.
Carten, Henry J., Pittsburgh, Pa.
Christie, W. Wallace, Paterson, N. J.
Herrick, J. A., 284 Pearl St., N. Y.
Kennedy, Julian, Pittsburgh, Pa.
Laughlin, Alex. & Co., Pittsburgh, Pa.
Lean, D. R. Co., Pittsburgh, Pa.
McClure, Amster & Co., Pittsburgh, Pa.

Pittsburgh Iron & Steel Engineering Co., Pittsburgh, Pa.
Roberts, Frank C., Philadelphia, Pa.
Smythe, S. R. Co., Incorporated Pittsburg, Pa.
Swindell, W. & Bros., Pittsburgh, Pa.
Wells, Bothwell & Co., Ltd., Pittsburgh, Pa.

Engines, Gas.
Otto Gas Engine Works, Phila., Pa.

Engines, Steam. Makers of.
Buckeye Engine Co., Salem, O.
Cleveland & Harwick, Erie, Pa.
Harrisburg Fdy. & Machine Works, Harrisburg, Pa.

Engines, Steam. Makers of.
Phoenix Iron Wks. Co., So. Norwalk, Conn.

Engines, Steam. Makers of.
Phoenix Iron Wks. Co., So. Norwalk, Conn.
Shipman Engine Co., Boston, Mass.
Southwark Foundry and Machine Co., Phila., Pa.

Engines, Steam. Makers of.
Tod, William & Co., Youngstown, O.
Weatherill, Robt. & Co., Chester, Pa.

Engines, Steam. Makers of.
Sweeter, W. A., Brockton, Mass.

Engines, Steam. Makers of.
Expansion Belts.

Engines, Steam. Makers of.
Boone, W. C. & Son, Brooklyn, N. Y.

Engines, Steam. Makers of.
Church, Isaac, Toledo, O.

Engines, Steam. Makers of.
Engines, Self-Measuring.

Engines, Steam. Makers of.
Lane Bros., Poughkeepsie, N. Y.

Engines, Steam. Makers of.
Francis, Wooden, Makers of.

Engines, Steam. Makers of.
Boston & Lockport Block Co., Boston, Mass.

Engines, Steam. Makers of.
John Sommer's Son, Newark, N. J.

Engines, Steam. Makers of.
Feed-Water Heaters.

Engines, Steam. Makers of.
Berryman, John, Philadelphia, Pa.

Engines, Steam. Makers of.
David, I. H. & Son, Hartford, Conn.

Engines, Steam. Makers of.
Goubert Mfg. Co., 32 Cortlandt St., N. Y.

Engines, Steam. Makers of.
Harron Safety Boiler Wks., Phila., Pa.

Engines, Steam. Makers of.
National Pipe Bending Co., New Haven, Conn.

Engines, Steam. Makers of.
Webster, Warren & Co., Phila., Pa.

Engines, Steam. Makers of.
Whitlock Coil Pipe Co., Elmwood, Conn.

Engines, Steam. Makers of.
Fencing, Iron and Wire.

Engines, Steam. Makers of.
Barnum, E. T., Detroit, Mich.

Engines, Steam. Makers of.
Champion Iron Co., Kenton, O.

Engines, Steam. Makers of.
Clinton Wire Cloth Co., Clinton, Mass.

Engines, Steam. Makers of.
DeKalb Fence Co., DeKalb, Ill.

Engines, Steam. Makers of.
Gilbert & Bennett Mfg. Co., 42 Cliff St., Hartman Mfg. Co., Beaver Falls, Pa.

Engines, Steam. Makers of.
Kilmer Mfg. Co., Newburgh, N. Y.

Engines, Steam. Makers of.
Mast, Foss & Co., Springfield, O.

Engines, Steam. Makers of.
The Van Dorn Iron Works Co., Cleveland, O.

Engines, Steam. Makers of.
Reliance Wire Works Co., Milwaukee, Wis.

Engines, Steam. Makers of.
Wires, Importers of.

Engines, Steam. Makers of.
Hoss, F. W., 80 John, N. Y.

Engines, Steam. Makers of.
Files and Plates, Manufacturers of.

Engines, Steam. Makers of.
Banker & White, Troy, N. Y.

Engines, Steam. Makers of.
Barnett, G. & H., 41 & 43 Richmond Phila.

Engines, Steam. Makers of.
Butcher, W. & S., 135 Duane St., N. Y.

Engines, Steam. Makers of.
McCaffrey File Co., Philadelphia.

Engines, Steam. Makers of.
Nicholson File Co., Providence, R. I.

Engines, Steam. Makers of.
Fire Brick, Makers of.

Engines, Steam. Makers of.
Borger, Cyrus, Philadelphia, Pa.

Engines, Steam. Makers of.
Gardner, Jas. & Son, Cumberland, Md.

Engines, Steam. Makers of.
Kreischer B. & Sons, Foot E. Houston, St. Maurer, H. & Son, 420 E. 23d, N. Y.

Engines, Steam. Makers of.
Benovo Fire Brick and Clay Co., Phila.

Engines, Steam. Makers of.
Overlander Fire Brick Co., Troy, N. Y.

Engines, Steam. Makers of.
Freestry Stove Lining Co., Taunton, Mass.

Engines, Steam. Makers of.
Valentine, M. D. & Bro., Woodbridge, N. Y.

Engines, Steam. Makers of.
Fire Sets.

Engines, Steam. Makers of.
Troy Nickel Works, Troy, N. Y.

Engines, Steam. Makers of.
Fishing Tackle.

Engines, Steam. Makers of.
Dame, Stoddard & Kendall, Boston, Mass.

Engines, Steam. Makers of.
Enterprise Mfg. Co., Akron, O.

Engines, Steam. Makers of.
Flint and Knives, Makers of.

Engines, Steam. Makers of.
Baeder Adamson & Co., Phila., Pa.

Engines, Steam. Makers of.
Fine Cleaners.

Engines, Steam. Makers of.
Mackey, Jas. T., St. Louis, Mo.

Engines, Steam. Makers of.
Fly Fans.

Engines, Steam. Makers of.
Matthal, Ingram & Co., Baltimore, Md.

Engines, Steam. Makers of.
Fodder Cutters.

Engines, Steam. Makers of.
Silver Mfg. Co., Salem, O.

Engines, Steam. Makers of.
Forges, Portable, & Co.

Engines, Steam. Makers of.
Bradley & Co., Syracuse, N. Y.

Engines, Steam. Makers of.
Bullock Bellows Co., Cleveland, O.

Engines, Steam. Makers of.
Buffalo Forge Co., Buffalo, N. Y.

Engines, Steam. Makers of.
Champion Blower & Forge Co., Lancaster, Pa.

Engines, Steam. Makers of.
Empire Portable Forge Co., Lansingburg, N. Y.

Engines, Steam. Makers of.
Foss Mfg. Co., Springfield, Ohio.

Engines, Steam. Makers of.
Sturtevant, B. & Co., Boston, Mass.

Engines, Steam. Makers of.
Forgings, Iron and Steel.

Engines, Steam. Makers of.
Bethlehem Iron Co., S. Bethlehem, Pa.

Engines, Steam. Makers of.
Cambria Steel-Cambria Iron Co., Johnstown, Pa.

Engines, Steam. Makers of.
Scranton Forging Co., Scranton, Pa.

Engines, Steam. Makers of.
Foundry, Machine, & Co., Chicago, Ill.

Engines, Steam. Makers of.
MacKellar Foundry Facing & Supply Co., Quincy, Ill.

Engines, Steam. Makers of.
Parson, J. W. & Co., Phila.

Engines, Steam. Makers of.
S. Obermayer Co., Cincinnati, O.

Engines, Steam. Makers of.
Smith, J. D. Fdy. Supply Co., Cin., O.

Engines, Steam. Makers of.
Whitehead Bros. Co., 517 W. 15th St., Quincy, Ill.

Engines, Steam. Makers of.
Foundry Riddles.

Engines, Steam. Makers of.
Eatey, W. S., 65 Fulton, N. Y.

Engines, Steam. Makers of.
Foundry Supplies.

Engines, Steam. Makers of.
Chicago Fdy. Supply Co., Chicago, Ill.

Engines, Steam. Makers of.
Colliard, Victor, Detroit, Mich.

Engines, Steam. Makers of.
MacKellar Fdy. Facing & Supply Co., Quincy, Ill.

Engines, Steam. Makers of.
S. Obermayer Co., Cincinnati, O.

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S. Obermayer Co., Cincinnati, O.

Engines, Steam. Makers of.
Parson, J. W. & Co., Phila.

Engines, Steam. Makers of.
Smith, J. D. Fdy. Supply Co., Cin., O.

Engines, Steam. Makers of.
Whitehead Bros. Co., 517 W. 15th St., Quincy, Ill.

Engines, Steam. Makers of.
Foundry Riddles.

Engines, Steam. Makers of.
Eatey, W. S., 65 Fulton, N. Y.

Engines, Steam. Makers of.
Foundry Supplies.

Engines, Steam. Makers of.
Chicago Fdy. Supply Co., Chicago, Ill.

Engines, Steam. Makers of.
Colliard, Victor, Detroit, Mich.

Engines, Steam. Makers of.
MacKellar Fdy. Facing & Supply Co., Quincy, Ill.

Engines, Steam. Makers of.
S. Obermayer Co., Cincinnati, O.

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S. Obermayer Co., Cincinnati, O.

Engines, Steam. Makers of.
Parson, J. W. & Co., Phila.

Engines, Steam. Makers of.
Smith, J. D. Fdy. Supply Co.,

- Oil Stoves.**
Pike Mfg. Co., Pike Station, N. H.
Ore Sampling Machines.
Fraser & Chalmers, Chicago, Ill.
Ores.
Winter, Francis, Philadelphia, Pa.
Ors.
Scranton Forging Co., Scranton, Pa.
Woodruff, Walter W. & Sons, Mt. Carmel, Conn.
Packing.
Billington, Jas. H. & Co., Phila., Pa.
Morris, Robt., St. Louis, Mo.
N. Y. Beltina & Packing Co. Ltd., N. Y.
Packings.
Ames Sward Co., Cheloopee, Mass.
Fram, E. T., Lancaster, Pa.
Hillebrand & Wolf, Phila., Pa.
Miller Lock Co., Philadelphia, Pa.
Paints.
Detroit Graphite Mfg. Co., Detroit, Mich.
Dixon, Jos. Crucible Co., Jersey City, N. J.
Garry Iron & Steel Roofing Co., Cleveland, O.
Paint Burners.
Dangler Stove & Mfg. Co., Cleveland, O.
Patent Solicitors.
Adey, J. A., Washington, D. C.
Fitzgerald, W., Washington, D. C.
Howson & Howson, Phila. & Wash'ton.
Jenner, H. W., Washington, D. C.
Paine & Ladd, Washington, D. C.
Stocking, E. B., Washington, D. C.
Perforated Metal.
Clinton Wire Cloth Co., Clinton, Mass.
Harrington & King Perforating Co., Chicago, Ill.
Phosphor Bronze.
Phosphor Bronze Smelting Co., Limited, 512 Arch, Philadelphia.
Phosphor Tin.
Crescent Phosphorized Metal Co., Philadelphia, Pa.
Crosby Steam Gauge & Valve Co., Boston, Mass.
Hak & Naumann, 516 Pearl, N. Y.
Picks and Mattocks.
Plumb, Fayette K., Philadelphia, Pa.
Pig Iron.
Houston, C. B. & Co., Philadelphia, Pa.
Mann, Edwin R., Philadelphia, Pa.
Montour Iron & Steel Co., Danville, Pa.
Naylor & Co., 45 Wall, N. Y.
Pickands, Brown & Co., Chicago, Ill.
Pilling & Crane, Philadelphia, Pa.
Samuel, Frank, Philadelphia, Pa.
Pig Iron Storage.
Am. Pig Iron Storage Warrant Co., 44 Wall, N. Y.
Pile Drivers.
Vulcan Iron Wks., Chicago, Ill.
Pipe, Bent.
National Pipe Bending Co., New Haven
Pipe Cutting and Threading Machines.
Bisnall & Keeler Mfg. Co., St. Louis, Mo.
Merrill Mfg. Co., Toledo, O.
Pancost & Maule, Philadelphia.
Saunders' Sons, D., Yonkers, N. Y.
Pipe Grips.
Frontiss Vise Co., 44 Barclay, N. Y.
Pipes, Flange, & Co., Makers of.
McNab & Co., Mfg. Co., N. Y.
Pipe, Water and Gas, Makers of.
Cumberland Nail & Iron Co., Phila., Pa.
Donaldson Iron Co., Emmaus, Pa.
Riverside Iron Works, Wheeling, W. Va.
Plane Irons, Manufacturers of.
Buck Bros., Millbury, Mass.
Planes, Manufacturers of.
Stanley Rule & Level Co., N. Y.
Plate Bending Rollers.
Schneekloth, H. A., 530 W. 28th St., N. Y.
Plate Iron and Steel, Mfrs of.
Edna Iron & Steel Co., Bridgeport, O.
Lukens Iron & Steel Co., Coatesville, Pa.
Moorehead-McCleane Co., Pittsburgh, Pa.
Molva & Sons, Reading, Pa.
Pottstown Iron Co., Pottstown, Pa.
Pottsville Iron & Steel Co., Pottsville, Pa.
Singer, Nimick & Co., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Wellman Iron & Steel Co., Thurlow, Pa.
Woodman Co., Philadelphia.
Plating, Nickel, Brass and Silver.
Angus, C. H., Albany, N. Y.
Shepard Hdw. Co., Buffalo, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
Plumbago.
Chicago Fdy. Supply Co., Chicago, Ill.
Plows.
Ross, A. M. & Co., Ilion, N. Y.
Pokers and Lifters.
Troy Nickel Works, Troy, N. Y.
Polishing Machines.
Watson & Sullivan, 204 E. 43d, N. Y.
Polishing Wheel.
La Massena, C. E. & Co., Newark, N. J.
Post Hole Diggers.
Gibbs Mfg. Co., Canton, Ohio.
St. New York
Graham, John H. & Co., 113 Chambers
Kohler, F. E. & Co., Canton, O.
Winter, L. & Co., Philadelphia, Pa.
Poultry Netting.
Barnum, E. T., Detroit, Mich.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
"Silver Finish."
Wright & Colton Wire Cloth Co., Worcester, Mass.
Powder.
Lafin & Rand Powder Co., 29 Murray New York Powder Co., 62 Liberty St., N. Y.
Power Hack Saws.
Mullers Falls Co., 93 Reade St., N. Y.
Stover Novelty Wks. Co., Freeport, Ill.
Powder Hammers.
Bradley & Co., Syracuse, N. Y.
Belden Mach. Co., New Haven, Conn.
Dienelt & Eisenhardt, Philadelphia.
Dupont Mfg. Co., St. Johnsbury, Vt.
Hackney Hammer Co., Cleveland, O.
Jenkins & Lingie, Bellefonte, Pa.
Powder Pouches and Shears.
Eaton, Geo. H. & Co., Boston, Mass.
Presses, Dies, & Co.
E. W. Bliss Co., Brooklyn, N. Y.
Crosby, G. A. & Co., Chicago, Ill.
Stark Mch. & Tool Co., Buffalo, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Mch. Co., Waterbury, Conn.
Presses, Power, Makers of.
Bliss, E. W. Co., Brooklyn, N. Y.
Eaton, Geo. H. & Co., Boston, Mass.
Manville, E. J. Mch. Co., Waterbury, Ct.
Merriman, A. H., Meriden.
Stark Mch. & Tool Co., Buffalo, N. Y.
Waterbury Mch. Co., Waterbury, Conn.
Pulverizing Mill.
Bradley Fertilizer Co., Boston, Mass.
Pulleys.
Camping Machinery.
Dean Bros. Steam Pump Works, Indianapolis, Ind.
Goulds Mfg. Co., Seneca Falls, N. Y.
Hooker-Corville Steam Pump Co., Chicago, Ill.
McGowan, J. H. & Co., Cincinnati, O.
Maslin, J. & Son, Jersey City, N. J.
Norwalk Iron Wks. Co., So. Norwalk, Conn.
Southwick Fdy. & Mch. Co., Phila., Pa.
Valley Pump Wks. Co., Northampton, Mass.
Worthington, Henry R., 86 & 88 Liberty St., N. Y.
Pumps, makers of.
Bellevue Pump Co., Bellevue, Iowa.
Deming Co., Salem, O.
Douglas, W. & B., Middletown, Conn.
Eaton, Geo. H. & Co., Springfield, O.
Myers, F. E. & Bro., Ashtabula, O.
St. Joseph Pump Co., St. Joseph, Mo.
Punches and Shears, Hand and Power.
Cleveland Hdw. Co., Cleveland, O.
New Dory Mfg. Co., Janesville, Wis.
Stark Mch. & Tool Co., Buffalo, N. Y.
Pipes and Machine Presses.
E. W. Bliss Co., Brooklyn, N. Y.
Cockburn Barrow & Mch. Co., Jersey City, N. J.
Crosby, G. A. & Co., Chicago, Ill.
Schneekloth, H. A., 530 W. 28th St., N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Wais & Roos, Punch & Shear Co., Cincinnati, Ohio.
Waterbury Fertilizer Foundry and Mch. Co., Waterbury, Conn.
Watson & Stillman, 204 E. 43d, N. Y.
Rails, Old and New.
Hirsh, E., Chicago, Ill.
Perry, W. H. & Co., Providence, R. I.
Richards, J. B. & Co., Pittsburgh, Pa.
Railway Supplies.
Scully Steel & Iron Co., Chicago, Ill.
Rat and Mouse Traps.
Burditt & Williams, Boston, Mass.
Essey, W. S., 65 Fulton, N. Y.
Ripley Mfg. Co., Unionville, Conn.
Razors.
Butcher, W. & S., 135 Duane St., N. Y.
Curley, J. & Bro., 6 Warren St., N. Y.
Electric Cutlery Co., 113 Chambers, N. Y.
Schmitz, E. Lothar, 92 Reade St., N. Y.
Southington Cutlery Co., Southington, Conn.
Torrey Razor Co., Worcester, Mass.
Refrigerators.
Challenge Corn Planter Co., Grand Rapids, Mich.
Refrigerator Door Fasteners.
Conroy, P. J. & Co., Philadelphia.
Rivets.
Blake & Johnson, Waterbury, Conn.
Burdett Iron Co., Tr. Y., N. Y.
Cobb & Drew, Plymouth, Mass.
Henderson, Jas. S., 166 Greenwich, N. Y.
Plymouth Mills, Plymouth, Mass.
Sternbergh, J. H. & Son, Reading, Pa.
Townsend, W. P. & Co., New Brighton, Pa.
Riveting Machines.
Adt. Jno. & Sons, New Haven, Conn.
Roasters & Bakers.
Mathal, Ingam & Co., Baltimore, Md.
Rock Drills.
Fenna, Diamond Drill & Mfg. Co., Birdsboro, Pa.
Rand Drill Co., 23 Park Place, N. Y.
Rolling Mill Machinery.
Birmingham Iron F'dry, Birmingham, Conn.
Booth, The Lloyd Co., Youngstown, O.
Lechug Foundry & Mch. Co., Pittsburgh, Pa.
Mahoning F'dry & Mch. Co., Danville, Pa.
Morgan Construction Co., Worcester, Mass.
Robinson-Rea Mfg. Co., Pittsburgh.
Totten & Hogg Iron and Steel F'dry Co., Pittsburgh, Pa.
Waterbury Fertilizer Foundry & Mch. Co., Waterbury, Conn.
Roll Lathes.
Totten & Hogg Iron & Steel F'dry Co., Pittsburgh, Pa.
Rolls, Chilled, Sand and Steel.
Booth, The Lloyd Co., Youngstown, O.
Chicago Foundry Co., Chicago, Ill.
Garrison, A. F'dry Co., Pittsburgh, Pa.
Johnston Foundry Co., Johnstown, Pa.
Seaman, Sleeth & Black, Pittsburgh.
Totten & Hogg Iron and Steel F'dry Co., Pittsburgh, Pa.
Roofing.
Berlin Iron Bridge Co., E. Berlin, Conn.
Boston Bridge Works, Boston, Mass.
Cambridge Roofing Co., Cambridge, O.
Cincinnati Corrugating Co., Piqua, O.
Johns, H. W. Mfg. Co., 87 Maiden Lane
Rope.
Travers Bros. Co., 107 Duane St., N. Y.
Rope and Web Goods.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N. Y.
Rope Wheels.
Cresson, Geo. V. Co., Philadelphia, Pa.
Crescent Goods, Bridgeport, Conn.
Rules, Manufacturers of.
Larkin Rule Co., Saginaw, Mich.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers, N. Y.
Sad Iron Holders.
Kisner, L. & Co., Chicago, Ill.
Sad Irons.
Cleveland F'dry Co., Cleveland, O.
Universal Sad Iron Co., Milwaukee, Wis.
Sand Paper.
Baeder, Adamson & Co., Phila., Pa.
Sash Balances.
Caldwell Mfg. Co., Rochester, N. Y.
Huguenin, R. E., W. F. Mfg. Co., Hartford, Conn.
Fullman Sash Balance Co., Rochester, N. Y.
Stewart & Baker, Rochester, N. Y.
Sash Cords and Chains.
Morton, Thos., 65 Elizabeth, N. Y.
Ossawan Mills Co., Norwalk, Conn.
Samson Cordage Works, Boston, Mass.
Smith & Egan, Mfg. Co., Bridgeport, Conn.
Sash Holders.
Miley, Peter, Philadelphia, Pa.
Sash Hooks.
Ives, H. B. & Co., New Haven, Conn.
Sash Pulleys.
Empire Portable Forge Co., Lansingburgh, N. Y.
Palmer Hardware Mfg. Co., Troy, N. Y.
Sash Pulley Marker.
Skelly, J. W. & Son, Bristol, Conn.
Sash Weights.
Brown, E. E. & Co., Philadelphia, Pa.
Sash Weight Fasteners.
Skelly, J. W. & Son, Bristol, Conn.
Saws, Makers of.
Aches, E. C. & Co., Indianapolis, Ind.
Dixson, Henry & Son, Phila., Pa.
Jennings, C. E. & Co., 97 Chambers, N. Y.
National Saw Co., 96 Reade St., N. Y.
Richardson Bros., Newark, N. J.
Simonds Mfg. Co., Fitchburg, Mass.
Saw Sets.
Kohler, F. E. & Co., Canton, Ohio.
Trotter, J. W. & Son, Chambers, N. Y.
Scales, Manufacturers of.
Buffalo Scale Co., Buffalo, N. Y.
Oxallion, John & Sons, 85-89 Cliff, N. Y.
Scrapers, Rend.
Am. Steel Scraper Co., Sidney, Ohio.
Kilbourne & Jacobs Mfg. Co., Columbus, O.
Sidney Steel Scraper Co., Sidney, O.
Screen Door and Window.
Queen Anne Screen Co., Burlington, Vt.
Screen Wire Holders.
Hamilton-Rankin Hdw. Co., Arkansas City, Kan.
Screw Cutting Machinery.
Wells Bros. & Co., Greenfield, Mass.
Wiles & Russell Mfg. Co., Greenfield, Mass.
Screw Drivers.
Alford & Berkele Co., 75 Chambers St., N. Y.
Brown, R. H. & Co., New Haven, Conn.
Cipitol Mfg. Co., Chicago, Ill.
Chantrel Tool Co., Reading, Pa.
Mayhew, H. B. Co., Shelburne Falls, Mass.
Screw Plate and Pipe Cutter.
Jarecki Mfg. Co., Erie, Pa.
Screws, Makers of.
American Screw Co., Providence, R. I.
Blake & Johnson, Waterbury, Conn.
Wm. H. Haskell Co., Pawtucket, R. I.
Miles, J. S., 205 Quarry, Philadelphia.
National Screw & Tack Co., Cleveland, Ohio.
Reynolds & Co., New Haven, Conn.
Worcester Machine Screw Co., Worcester, Mass.
Screw Stays.
Barnes, W. F. & John, Rockford, Ill.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Seythe Stones and Whetstones.
Pike Mfg. Co., Pike Station, N. H.
Cleveland Stone Co., Cleveland, O.
Huron Grindstone Co., Port Austin, Mich.
Shafting, Makers of.
Cresson, Geo. V. Co., Philadelphia, Pa.
Edna Iron & Steel Co., Bridgeport, O.
Fittsimons & Co., Cleveland, Ohio.
Sellers, Wm. & Co., Inc., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.
Shaped Iron and Steel, Manufacturers of.
Edna Iron & Steel Co., Bridgeport, O.
Allentown Rolling Mill, Phila.
Belleville Steel Co., St. Louis, Mo.
Illinois Steel Co., Chicago, Ill.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Passalo Rolling Mill Co., Paterson, N. J.
Pottsville Iron & Steel Co., Pottsville, Pa.
Roberts, A. P. & Co., Phila., Pa.
The Phoenix Iron Co., Phila., Pa.
Shears and Scissors.
Acme Shear Co., Bridgeport, Conn.
Heinrichs, R. Sons Co., Newark, N. J.
Sheet Iron and Steel, Manufacturers of.
Edna Iron & Steel Co., Bridgeport, Ohio.
Chees Bros., Pittsburgh, Pa.
Moorehead-McCleane Co., Pittsburgh, Pa.
Pierson & Co., 24-26 West St., N. Y.
Rely, John, Fort Hunter, P. O., Pa.
Singer, Nimick & Co., Ltd., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Alan Wood Co., Philadelphia.
W. Dewees Wood Co., McKeesport, Pa.
Sheet Zinc.
Mathlessen & Regeler Zinc Co., La Salle, Ill.
Shelf Brackets.
Koch, A. B. & Co., Peoria, Ill.
Shovels, Spades and Scoops.
Ross, A. M. & Co., Ilion, N. Y.
Sinks.
Douglas, W. & B., Middletown, Conn.
Skates, Ice.
Dame, Stoddard & Kendall, Boston, Mass.
Winslow, Sam'l, Skate Mfg. Co., Worcester, Mass.
Skates, Roller.
Henley, M. O., Richmond, Ind.
Winslow, Sam'l, Skate Mfg. Co., Worcester, Mass.
Skylights.
Plenty Horticultural & Skylight Wks., 145 Liberty St., N. Y.
Smelting Works.
Regard & Paul S., 760 S. Broad, Phila.
Speaking Tubes.
Ostrander, W. R. & Co., N. Y.
Wollensak, J. F., Chicago, Ill.
Specialties, Pat. Articles.
Kingslow, O., Cleveland, O.
Speed Indicators.
Chenob Slight, 103 Fulton St., N. Y.
Spelter.
Mathlessen & Regeler Zinc Co., La Salle, Ill.
Spoons and Forks.
Holmes & Edwards Silver Co., Bridgeport, Conn.
Rogers, The Wm. Mfg. Co., Hartford, Conn.
Sporting Goods.
Bartley & Graham, 318-315 B'way, N. Y.
Spring.
Am. Spiral Spring Co., Pittsburgh, Pa.
Cary, Alanson, 340-342 W. 29th St., N. Y.
Dunbar Bros., Bristol, Conn.
Haley Mfg. Co., Concord, N. H.
Miller & Van Winkle, Brooklyn, N. Y.
Morgan Spring Co., Worcester, Mass.
Nourse, Fred., 168 W. 27th St., N. Y.
Sabin Machine Co., Montpelier, Vt.
Washburn & Moen Mfg. Co., Worcester, Mass.
Wolf, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
Spring Hinges.
Bardley, J., 149 151 Baxter St., N. Y.
Chicago Spring Butt Co., Chicago, Ill.
Fullman Sash Balance Co., Rochester, N. Y.
Shepard Hdw. Co., Buffalo, N. Y.
Stover Mfg. Co., Freeport, Ill.
Van Wagoner & Williams Co., 14 Warren St., N. Y.
Spring Keys and Cotter's.
Jencks Mfg. Co., Pawtucket, R. I.
Whitman & Barnes Mfg. Co., Syracuse, N. Y.
Sprinklers.
Smith, Oliver A., Clarkston, Mich.
Stauden W. Ware.
Am. Stamping Co., 104 & 106 John St., New York
Stamping Works.
Avery Stamping Co., Cleveland, O.
Cleveland Stamping & Tool Co., Cleveland, O.
Staples.
Cobb & Drew, Plymouth, Mass.
Titchener E. H. & Co., Binghamton, N. Y.
Steam Gauges.
Ashcroft Mfg. Co., 111 Liberty St., N. Y.
Bristol Mfg. Co., Waterbury, Conn.
Steam Hammers, & Co., Makers of.
Dienelt & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street, N. Y.
Steam Heating.
Webster Warren & Co., Phila., Pa.
Steam Separators.
Goubert Mfg. Co., 82 Cortland St., N. Y.
Harrison Safety Boiler Wks., Phila., Pa.
Steel Balls.
Grant Anti-Friction Ball Co., Fitchburg, Mass.
Steel, Cold Rolled Strip.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
Steel Figures and Alphabets.
Krogerud, W., 61 Fulton, N. Y.
Steel Importers.
Abbott, Tere & Co., N. Y. and Boston.
Hobson, Francis, Seaman & Co., 97 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Newton & Shipman, 88 John, N. Y.
Wetherell Bros., 93 Liberty St., N. Y.
Whitney, A. B. & Co., B'way, N. Y.
Wolf, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.
Steel (Mushet's Special).
Jones, B. M. & Co., Boston.
Steel Manufacturers.
Edna Iron & Steel Co., Bridgeport, O.
Bethlehem Iron Co., S. Bethlehem, Pa.
Baker, Herman & Co., 103 Duane St.
Buffalo Steel Foundry, Buffalo, N. Y.
Carbon Steel Co., Pittsburgh, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Frankford Steel Co., Philadelphia.
Gautier Steel Department or Cambria Iron Co., Johnstown, Pa.
Hobson, Francis, Seaman & Co., 97 John St., N. Y.
Illinois Steel Co., Chicago, Ill.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Jones, B. M. & Co., Boston, Mass.
Kaiser, Ellison & Co., Sheffield, Eng.
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Lukens Iron & Steel Co., Coatesville, Pa.
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Taylor Iron & Steel Co., High Bridge, N. J.
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W. S. Tyler Wire Works Co., Clev'd.

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THE IRON AGE.

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Bethlehem Iron Co.	22	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Bettendorf Hollowsteel	67	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Axle Wks.	67	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Bevin Bros. Mfg. Co.	104	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Bicycle Step Ladder Co.	85	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Bicycle Wheel Co.	85	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Bignall & Keeler Mfg. Co.	61	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Bignall & Keeler Mfg. Co.	61	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Billings & Spencer Co.	99	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Billington, J. H. & Co.	34	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Bingham, W. & Co.	108	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Birmingham Iron	205	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Blair Mfg. Co.	12	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Blake & Johnson.	12	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Bliss Co. E. W.	41	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Blissman, L. & Son.	81	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Boget, John L.	66	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Boker, Hermann & Co.	39	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Boone, W. C. Mfg. Co.	29	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Booth, The E. & Co.	18	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Borden & Lovell.	18	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Borgner, Cyrus.	28	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Boston Bridge Works.	35	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Boston Gear Works.	35	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Boston Lock'n'Block Co.	52	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Box, Alfred & Co.	52	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Bradford Mill Co.	17	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Bradley & Co.	113	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Bradley Fertilizer Co.	42	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Brady Mfg. Co.	64	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Brass Goods Mfg. Co.	2	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Bridgeport Chain Co.	82	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Bridgeport Gun Imple.	51	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Bright, Marvin.	61	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Bristol Mfg. Co.	91	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Britton, Horace E.	30	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Britton, J. H. & Co.	30	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Broderick & Bascom Rope	6	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Co.	6	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Brown Supply Co.	91	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Brown, E. E. & Co.	91	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Brown Holsting & Con-	59	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
veying Machine Co.	59	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Brown, R. H. & Co.	70	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Brown & Sharpe Mfg. Co.	58	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Bryden Horse Shoe Co.	79	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Buchanan Fence Co.	79	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Buck Bros.	36	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Buckeye Engine Co.	36	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Buffalo Forge Co.	56	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Buffalo Scale Co.	78	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Buffalo Edge Tool Wks.	78	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Buffalo Specialty Mfg. Co.	78	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Bullcock Belows Co.	78	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Bullcock Iron Co.	78	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Burditt & Williams.	81	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Burgess & Loxley.	21	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Burke, P. F.	45	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Burnham, Geo. & Co.	45	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
Burr & Houston Co.	25	Clothing & Leigra.	46	McGowan, J. H. & Co.	38	Plum & Atwood Mfg. Co.	3	Stewart & Peterson Co.	20
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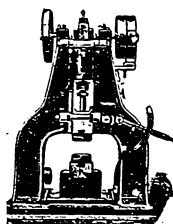
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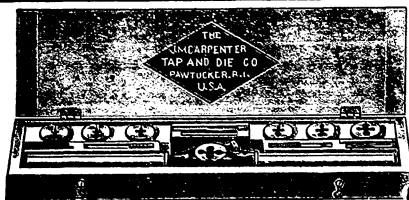
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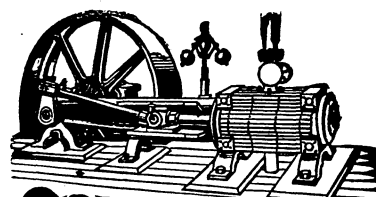
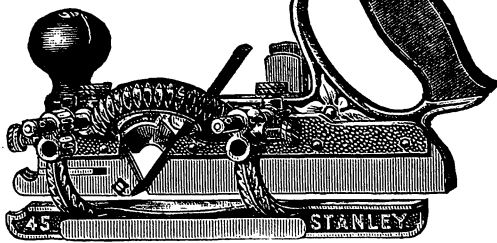
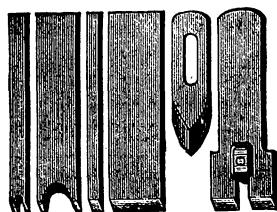
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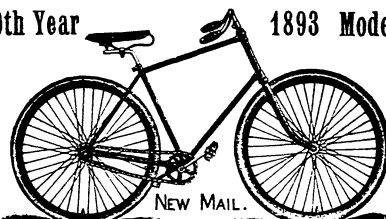
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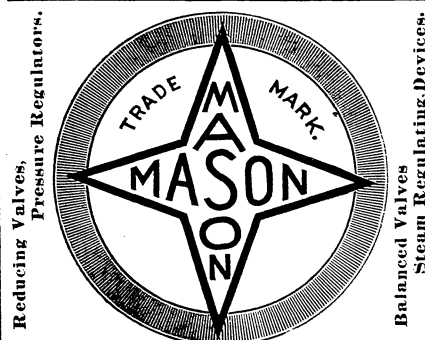
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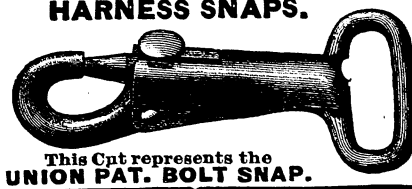
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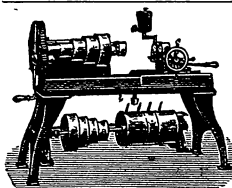
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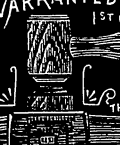
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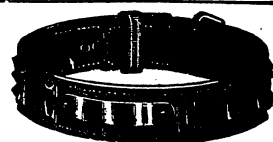
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THE IRON AGE

THURSDAY, APRIL 13, 1893.

Statistics of Immigration.

During the year ending June 30, 1892, 623,084 immigrants of all nationalities entered the United States, an increase of 62,765 over the preceding fiscal year. Europe sent 608,472; Asia, 8712; the West Indies, 1767, and South America 680. The largest number came from Germany, which sent 130,758; Russia sent 84,393; Italy, 62,137; Ireland, 55,467; England, 49,770; Sweden, 43,247; Hungary, 37,236, and

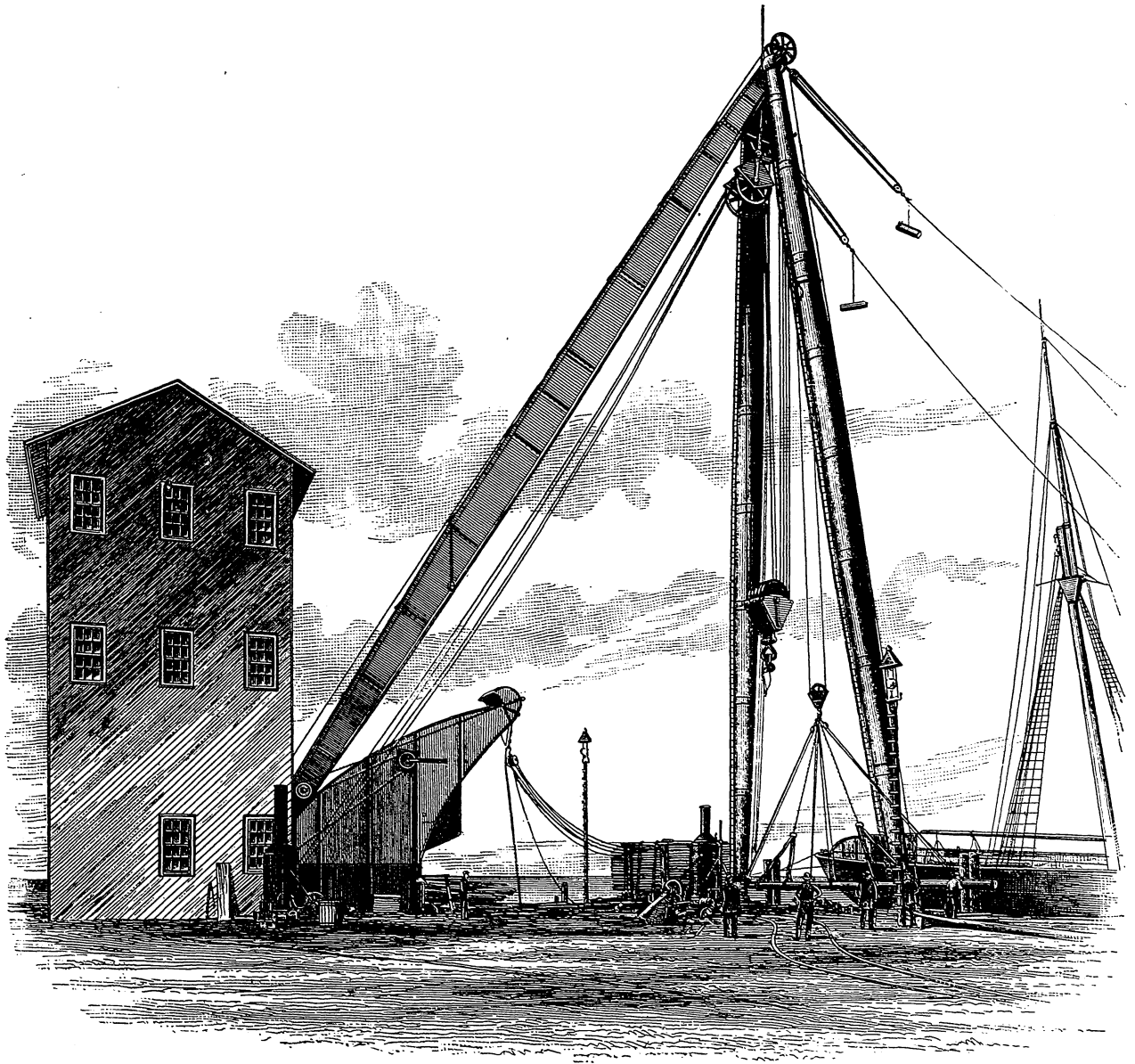
of the Dominion of Canada, in his official report for the calendar year 1891, states that the number of immigrant passengers arrived at Canadian ports from European countries *en route* for the United States was as follows for a number of years:

1885.....	25,927	1889.....	84,862
1886.....	53,429	1890.....	103,854
1887.....	91,053	1891.....	105,213
1888.....	85,708		

These totals do not include the large number of Canadians who emigrate, notably

One Hundred and Thirty-Ton Shears at Maryland Steel Company's Works.

The mammoth shears recently erected at the works of the Maryland Steel Company at Sparrow's Point, Md., have attracted much attention on account of the fact that their first use was for unloading the cargo from the steamship "Longueil." This cargo consisted of the principal part of the exhibit to be made at Chicago by the Krupp Works of Essen and comprised



ONE HUNDRED AND THIRTY-TON SHEARS AT MARYLAND STEEL COMPANY'S WORKS.

Poland 83,299. Of the total of 623,084 immigrants arriving on these shores during the twelve months, 50,220 were classed as skilled labor and 2674 as professional, while 261,313 are grouped as miscellaneous, and in the case of 308,877 no occupation is stated. Over 80 per cent. of the total, or 489,810, landed at New York, while 55,280 entered Baltimore, 32,343 entered Boston and 31,102 landed at Philadelphia. The Treasury Department does not provide for the collection of statistics of the arrival of immigrants from British North American Possessions and Mexico, but the Minister of Agriculture

to New England points. If the number of European immigrants reported as passing through Canada during the calendar year 1891 be added to the number of those counted as arriving in our country during the same year, they will aggregate 700,464 instead of 595,251. The number of European immigrants reported as destined for the United States through Canada during the seven calendar years ending with 1891 was 550,046, a matter which the Chief of the Bureau of Statistics suggests should be taken into account in the consideration of matters affecting the question of immigration.

six guns, the largest weighing 270,000 pounds (the others being smaller), specimens of armor plate, both tested and not, shafting, and smaller articles of iron and steel, making a total load of some 1000 tons.

The exact capacity of the shears has not been ascertained. They were tested by lifting a bundle of rails weighing 130 tons, which, together with the necessary gripping appliances, made a total load of at least 140 tons. The crane handled this immense weight without difficulty. The general arrangement of the shears is shown very clearly in the views, Figs. 1 and 2.

The front legs consist of hollow steel tubes $\frac{3}{4}$ inch thick, having a diameter at the center of 4 feet and tapering to each end, where the diameter is 3 feet. They are 116 feet long and are spaced 45 feet apart at the bottom. Their lower ends rest in cups formed in cast iron spiders placed on the edge of the dock.

When the legs are moved to their extreme outward position, as indicated in Fig. 2, the block is over the center of a large vessel moored alongside the dock. This permits of the easy loading and unloading of heavy articles. Extending parallel with the edge of the pier, and just back of the front legs, is a standard gauge track.

The back leg is a latticed girder, the construction of which is shown in the engravings, 126 feet long. The upper end joins the two front legs, while the lower end is provided with rollers adapted to move on a curved base. The shears are provided with two separate and independent hoisting devices. A snatch block is operated by a 1 inch steel rope which leads from the top of the shears down to the house containing the hydraulic rams, where it passes over suitably arranged sheaves, where it is operated by a ram having a diameter of $18\frac{1}{2}$ inches and a stroke of 14 feet. The main block is operated by four hydraulic rams having a diameter of $18\frac{1}{2}$ inches and a stroke of 16 feet 3 inches. These four rams are arranged in pairs two on each side of the bottom of the back leg. From each pair pass two steel ropes to the top of the shears, then down to the main block and then over sheaves placed centrally in the top of the shears. A pressure of 1700 pounds to the square inch has been found sufficient to lift the heaviest load yet attempted.

It is very evident that as the front legs of the shears approach the perpendicular, and then pass beyond it toward the rear, there is a tendency to fall in the direction of the rams. The weight of the three legs, due to their inclined position, is carried by two chains placed one on each side of the curved track upon which the lower end of the back leg runs, and one of which is plainly outlined in Fig. 1. The chain is secured to the front, or nose, of the curved track, then passed around a pulley

Car for Carrying the Great Gun.

Our third illustration is of the great car designed for carrying the 185-ton gun from Sparrow's Point to Chicago. On the side is the following legend:

Built at Altoona Shops	
Pennsylvania Railroad.	
Weight of gun,	270,000.
Weight of bridge,	47,000.
Weight of each car,	64,000.
Total load of,	445,000.

The car consists, in fact, of four independent cars, each running upon eight wheels, and each having a wheel base of

Tonnage at United States Ports.

The tonnage entered at all ports of the United States during the 12 months ending May 30, 1892, was 21,013,424, of which 16,543,469, or nearly four-fifths, was foreign tonnage. New York received 7,304,015 tons, or 34.76 per cent. of the total, while Philadelphia, Boston, San Francisco, New Orleans and Baltimore received amounts varying between 1,733,047 for the former and 1,129,447 for the latter. The Lake ports entered 2,832,944 tons. There was entered at sea ports 5627 American and 13,623 foreign vessels, a total of

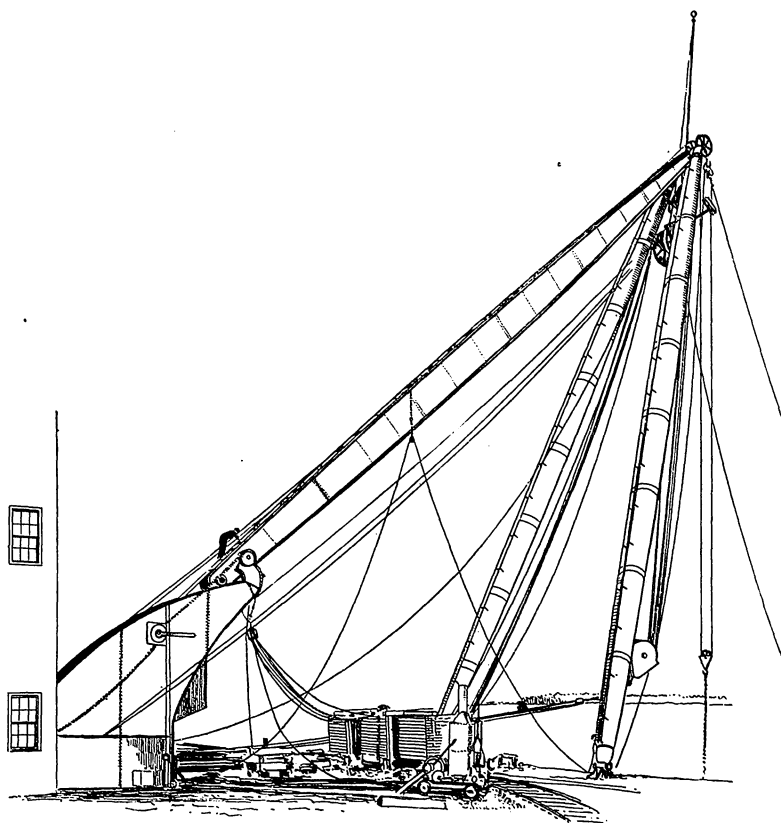


Fig. 2.—Legs in Extreme Outward Position.

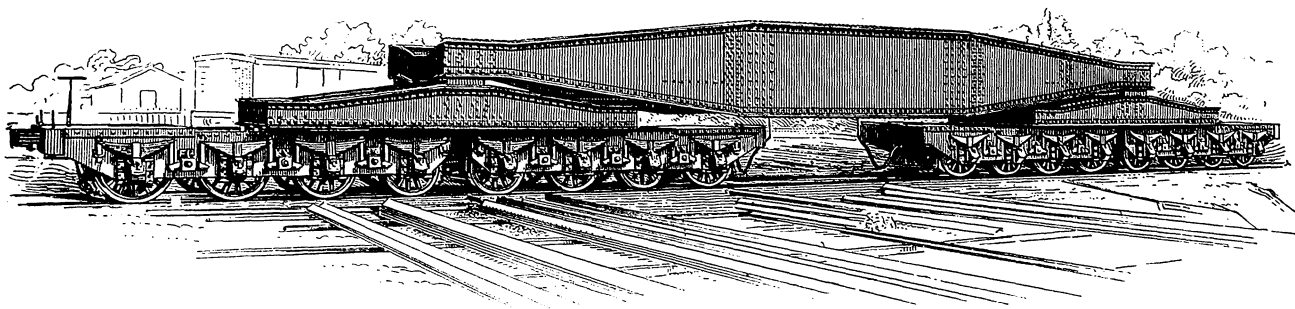


Fig. 3.—Car for Carrying the One Hundred and Thirty-five-Ton Krupp Gun.

ONE HUNDRED AND THIRTY-TON SHEARS AT MARYLAND STEEL COMPANY'S WORKS.

on the end of the back leg, then back to a pulley placed about midway of the side of the track, then down and around a pulley placed in the ram house, then up over guide pulleys to a counterweight. This arrangement has been found to work most satisfactorily, and has served its purpose admirably.

The rear leg is brought in by means of steel ropes operated by a hydraulic ram and passing around sheaves in its lower end. The largest gun of the exhibit was successfully raised and placed on the dock on Friday, the 7th inst.

12 feet 7 inches in length. The four cars are united in pairs by means of a small bridge, 14 feet 5 inches in length, and these two bridges are in turn united by the large central bridge, which is 61 feet long. Each of the small bridges is pivoted at each end to the car, while each end of the large bridge is pivoted centrally to the small bridges. This construction gives an independent movement, as far as curves are concerned, to each of the cars, and, at the same time, distributes the load over a wheel base 80 feet in length. The width of the car is 9 feet 3 inches.

19,250 vessels, and at the Lake ports 13,894 vessels. It will be observed that the Lake ports entered relatively a large number of vessels, but that they were of light tonnage.

The foreign trade returns of the Argentine Republic for last year show merchandise imports valued at, gold, \$91,400,000, and exports at \$112,700,000. Compared with the previous year, this is an increase of 36 per cent. in imports and 13 per cent. in exports.

The Draper Screw-Cutting Engine Lathe.

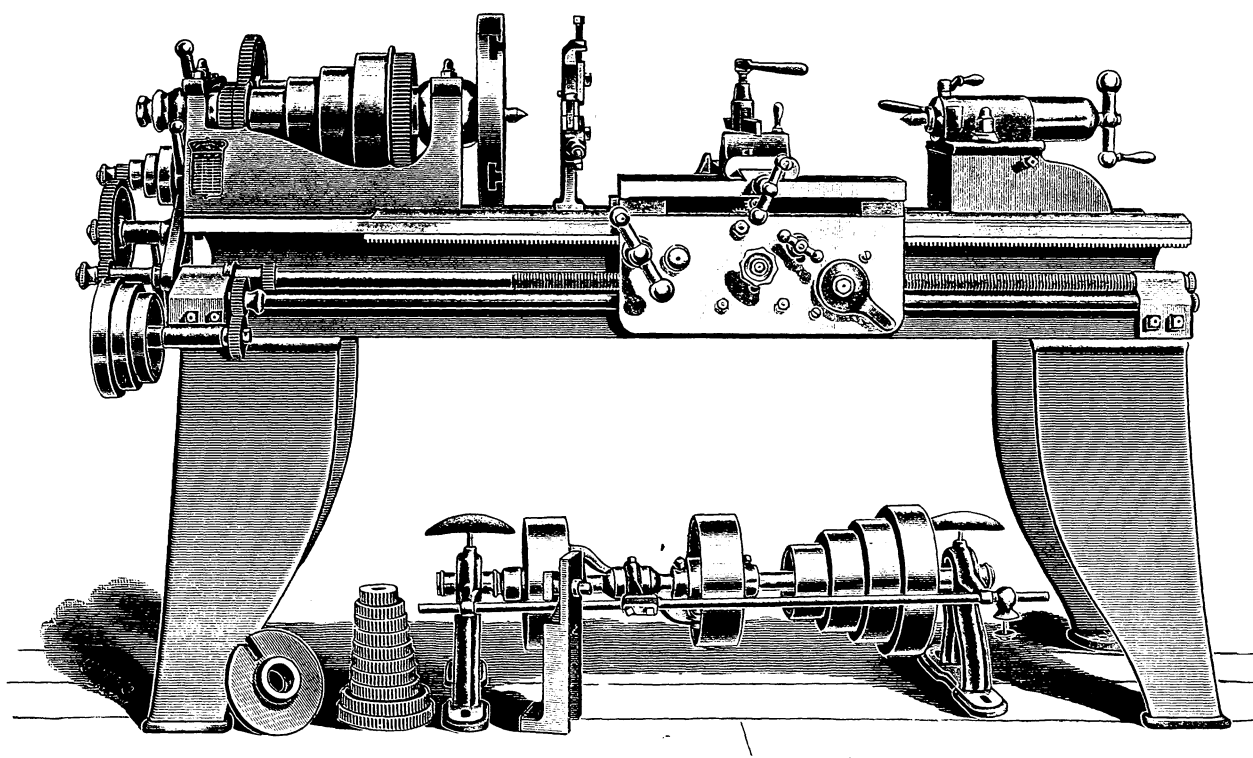
The Draper Machine Tool Company of Worcester, Mass., build the heavy pattern, 6-foot bed, 15 inch swing, screw-cutting engine lathe which is shown in the accompanying engraving. A 1-inch hole passes through the head spindle which has a bearing $2\frac{1}{2}$ inches in diameter by $4\frac{1}{2}$ inches long. The cone pulley is of large diameter and takes a $2\frac{1}{2}$ inch belt. The rest has a bearing on the tracks 20 inches long. The screw and rod are upon the front side of the bed, and by means of a slip pinion gear on the feed rod, thrown into mesh with the gear on the screw, more or less feed can be obtained than that transmitted by the belt feed. The screw is operated for screw cutting by means of an open and shut nut attached to the feed apron, and when so engaged the rack pinion gear can be slipped out, thereby lessening the friction of the moving rest or carriage.

in 1891, Bengal again furnishing the chief supply, namely, 20,008 tons in 1891. Petroleum was produced in India during the years 1890 and 1891 to the amount of 4,931,093 gallons and 6,136,495 gallons, respectively. The above figures show a satisfactory advance in these industries, which would be still more gratifying did not the value of the Indian currency meanwhile show a distinct decline, largely counterbalancing the increased volume of products.

The Haines Automatic Micrometer Gauge.

The Haines Gauge Company, at 906 Filbert street, Philadelphia, Pa., are placing on the market an automatic micrometer gauge, which, although adapted for all purposes where an ordinary fixed or caliper gauge can be used, is especially designed for measuring hot plates, sheets or

Fastened to the gauging screw directly under the disk is a spiral spring, which tends to rotate the disk, and thus close the screw upon any article to be measured. In practical working, for instance in gauging a hot plate, the dial is turned by hand (to open the gauge screw) considerably more than the finished thickness of the plate. The gauge is then put on the plate and the trigger pulled. The spiral spring causes the disk to revolve and sets the gauge screw on the surface of the plate. The trigger is now released, and the locking bar engaging the teeth of the disk prevents it from turning while the gauge is pulled off the plate to take the reading. The graduations on the face of the disk indicate the thickness. This operation can be repeated at each pass through the rolls, and will show the amount of each reduction. In following the work down in this manner the exact amount of reduction for the finishing pass will be easily determined. The whole operation is extremely simple, yet gives



THE DRAPER SCREW-CUTTING ENGINE LATHE.

The lateral and cross feeds are so constructed that they cannot be engaged at the same time. The spindles are made of the best crucible hammered steel, and the boxes in the head are cast iron, which in the long experience of the makers, has proved to be the best bearing in an engine lathe. Bronze boxes are furnished when desired. All labor on these lathes is by the day and the material used is the best obtainable. The lathes are provided with either plain gib rest with power cross feed or with compound power cross feed rest.

A return recently issued by the Revenue and Agricultural Department of British India gives reliable statistics for the production of minerals in that country for the years 1890 and 1891. The total productions of salt in the British Provinces and native States of India was in 1890 1,052,530 tons, and in 1891 1,015,912 tons. Of coal the output in 1890 was 2,168,521 tons, and in 1891 it amounted to 2,229,400 tons. Of this amount the Bengal mines yielded 1,647,945 tons. Iron ores were produced to the extent of 28,295 tons in 1890, and 33,335 tons

bars while in process of rolling. The accuracy obtained will obviate the possibility of any disagreement in regard to variations in thickness, and reduces to a minimum the loss from over or underweight. By its use an operator can ascertain the thickness of the metal at each pass through the rolls and make the necessary reductions for the final pass, effecting a saving in time and lessening the number of passes usually required. The gauge is simple in construction, and light in weight, weighing about $2\frac{1}{2}$ pounds. The gauging screw is made with coarse pitch and double thread, and has for a head a graduated disk about $2\frac{1}{2}$ inches in diameter, which indicates the measurements.

The edge of this disk is serrated, and can be clamped or held at any point to prevent turning, by a locking bar or knife edge arranged to slide in between the teeth at the will of the operator. The movement of this locking bar is controlled by a trigger (on the gauge handle), operated by the forefinger. The handle is made of sufficient length to enable the person using it to measure hot work with ease.

the gauger at each stage of the process definite measurement. The gauge is operated altogether with one hand, excepting when set for the first time for each plate. It is claimed that one automatic gauge will answer for all the fixed caliper gauges for standard thicknesses, within its range, and obviates the expense of making special gauges for special thicknesses. The gauge covers a wide range of sizes, and gives accurate measurements on objects which may be a shade too small or too large for any fixed or caliper gauge within its limits, and is so fine as to denote the gauges when "tight," "slack" or "full," &c. Corrections for wear, for shrinkage of hot work, and for proper adjustments, are made by compensating screws. The dials for ordinary use are known as the "F. D." dials, and are divided into fractions and decimals of an inch, the smaller divisions being $\frac{1}{16}$ inch and 0.0025 inch respectively. Special dials can be furnished when ordered, graduated to any desired standard or special divisions. Birmingham wire-gauge dials are also supplied, divided into numbers and decimals.

The Buffalo Furnace.

An undertaking which is significant in many respects has just been successfully inaugurated at Buffalo. Several years

soon subsided. Then, in co-operation with Rogers, Brown & Co., Frank B. Baird, who had been operating for years in the Hocking Valley, purchased the old furnace property at Tonawanda, near Buffalo, and built a modern furnace, the

tion on the Lakes, the improvement of the quality of Walston coke and the rapid expansion of the local market through the development of Buffalo as a manufacturing center, all these factors contributed to making a marked success of a venture

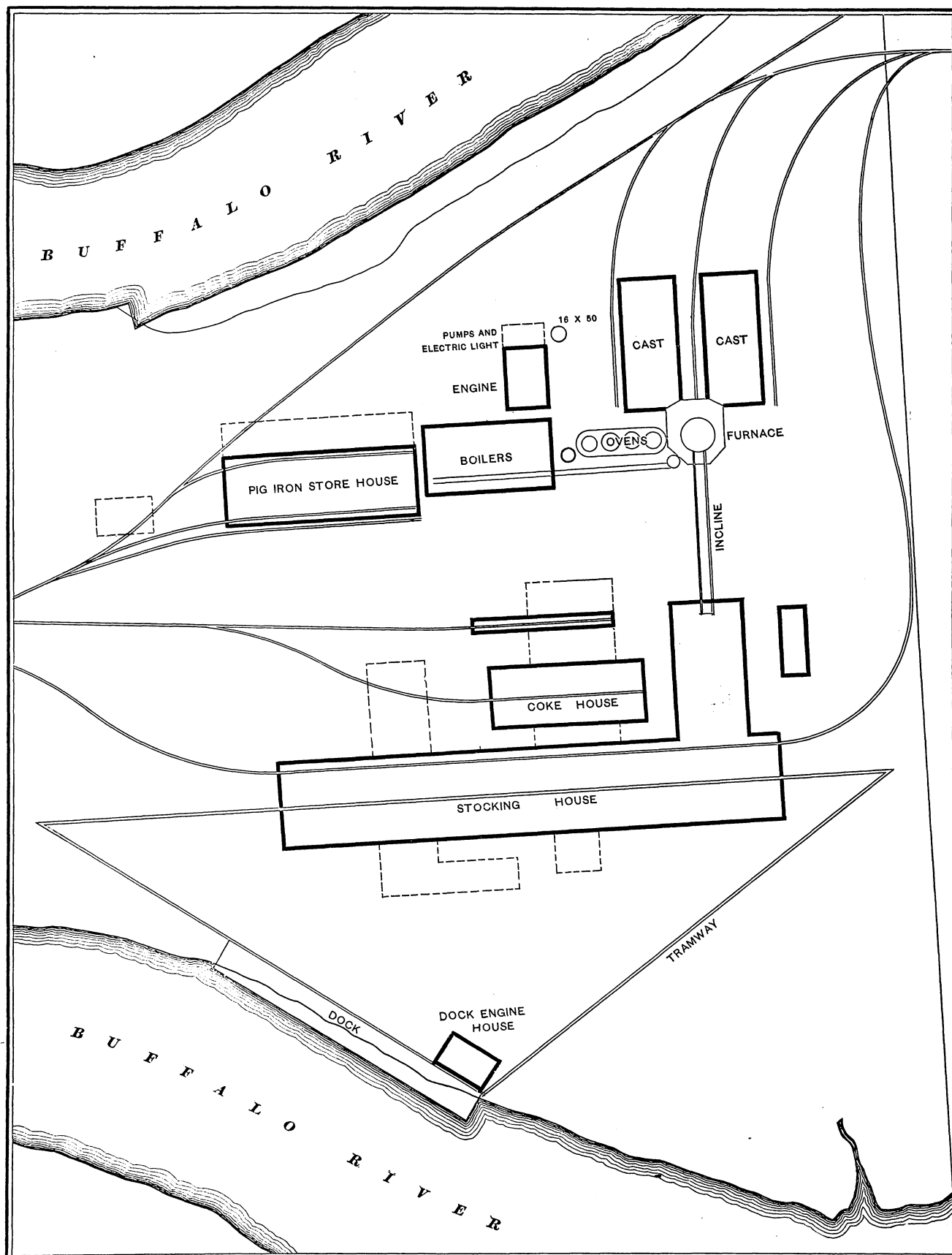


Fig. 1.—Plan of the Plant of the Buffalo Furnace Company.

since the newspapers in that city debated with more enthusiasm than discretion the question of its advantages as a location for the manufacture of pig iron. Previous disastrous failures had pretty thoroughly frightened local capital, and the agitation

Niagara, which has enjoyed a very prosperous career in spite of the general and prolonged depression in the iron trade.

The growth of Buffalo as a coal-shipping port, the cheapening of Lake ore and the lowering of the cost of its transporta-

tion on the Lakes, the improvement of the quality of Walston coke and the rapid expansion of the local market through the development of Buffalo as a manufacturing center, all these factors contributed to making a marked success of a venture

which under previous conditions had proved unremunerative. Encouraged by this success and impressed with the possibilities of future developments, Frank B. Baird interested the powerful firm of Hanna & Co. of Cleve-

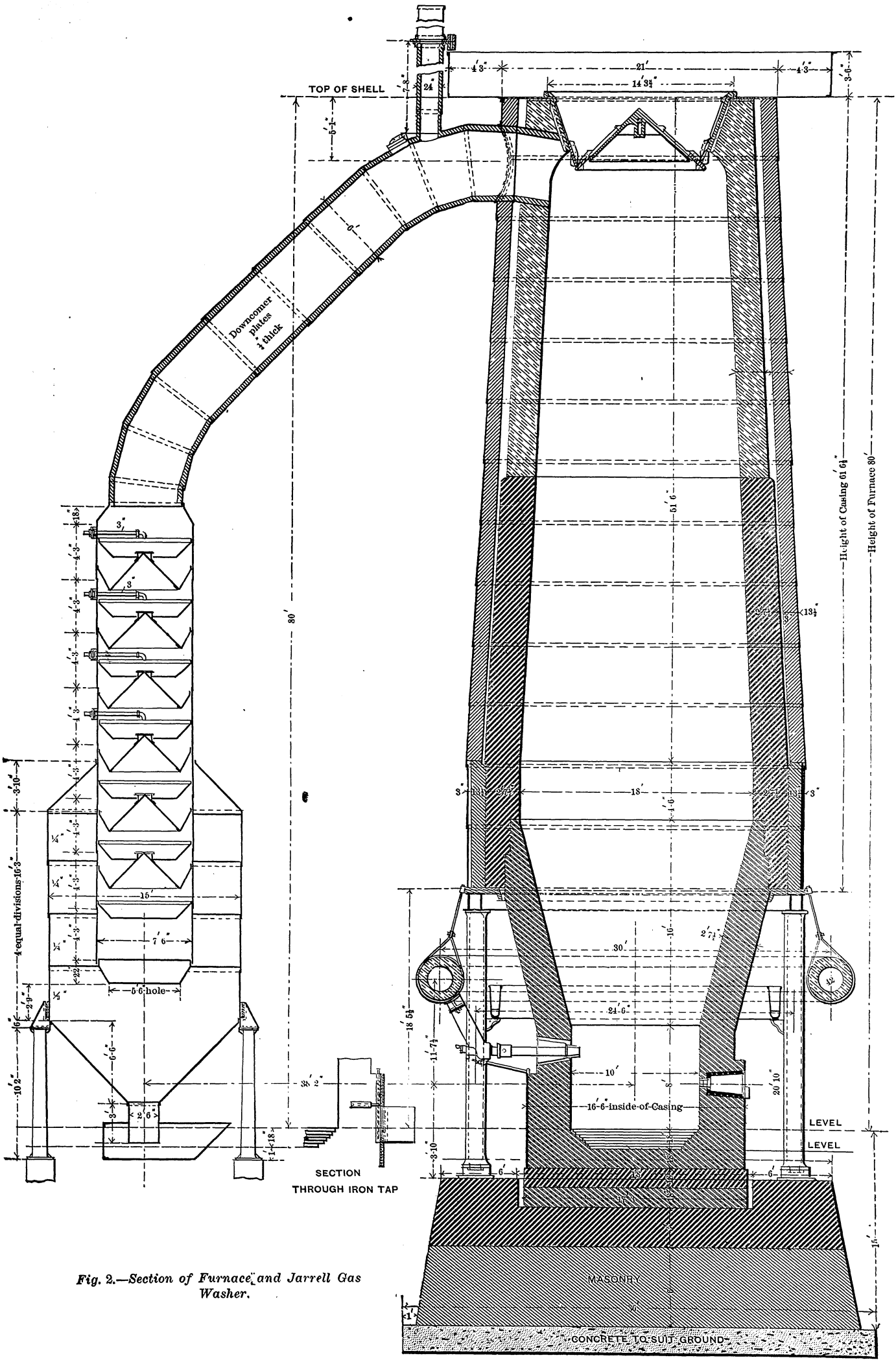


Fig. 2.—Section of Furnace and Jarrell Gas Washer.

land, Ohio, in the enterprise, which is now fairly launched as an important contributor to the pig-iron producers of New York. He succeeded in securing by lease the property of the Union Iron Works, consisting of a large number of fine buildings and a very valuable tract of land, located on the Buffalo river, with splendid dock facilities and excellent railroad connections. The Union Iron Works, at one time one of the large producers of shapes, had been idle since early in the eighties, the property being controlled by the Packer and Pardee estates. In the interval the plant and machinery had become antiquated, and the greater part of the latter has been dismantled.

It was decided to build a modern furnace plant, to produce foundry iron for the open market, the work of designing the plant being put into the hands of Julian Kennedy, of Pittsburgh, the well-known engineer. It was proposed to utilize as far as possible the old buildings, all of brick with iron and slate roofs. The possession of these buildings enabled the management to indulge in luxuries denied the majority of furnacemen, which facilitate the handling of materials, and make special economies possible. Thus the stockhouse (540 x 90 feet with 148 x 75 foot l) is capable of housing 65,000 tons of ore, so that the whole supply, during the time when navigation is suspended, is under roof. It loses the moisture it carried, and to that extent relieves the furnace of its work of drying. The coke house (160 x 60 feet) has a capacity of 2000 tons, which is kept in stock, to be drawn upon to counteract any irregularities in the deliveries of fuel or a cessation of the supply through accident or strikes. The metal house (207 x 75 feet) has a storage capacity of 7000 tons of pig iron from which shipments can be made during inclement weather, particularly during the winter months. Our plan indicates the position of the buildings, the dotted lines showing those parts of the original structures which have been removed.

The ore is received in lake vessels which enter Buffalo Creek, where at present 14 feet of water are available. Along the dock are located four McMyler cantilever unloaders, built in Cleveland, which transfer the buckets to an elevated tramway, built by the Trenton Iron Company of Trenton, N. J., from designs by E. G. Spilsbury. This tramway is triangular in its layout, as shown in the plan, Fig 1, the buckets traveling to the stockhouse, which is commanded from end to end. The ore is automatically discharged at any point fixed upon, the empty buckets returning to the loading dock automatically for the limestone. A contract has been entered into by Carroll Brothers of Buffalo for a five-years' supply, the stone coming from the Canadian side. An analysis of this stone made by Maurice B. Patch shows the following: Silica, 1.11 per cent; protoxide of iron, 0.53 per cent; carbonate of lime, 96.45 per cent. and carbonate of magnesia, 1.18 per cent.

The coke used is the Walston, which is delivered direct by the Rochester & Pittsburgh Railroad. It is unloaded direct into the charging cars from the railroad cars standing in the leanto, 200 x 40 feet, along a great part of the river side of the ore stockhouse.

The general arrangement of the furnace plant proper will be readily understood by reference to the accompanying plan. The stock is conveyed to the furnace top by an inclined plane.

The furnace arrangement is characterized by one important innovation. It has two cast houses, 160 x 60 feet, the principal advantage of which is that the iron may be allowed time to cool in the bed. It is also possible to do practically all of the cast house work during the day time, thus economizing in labor and in-

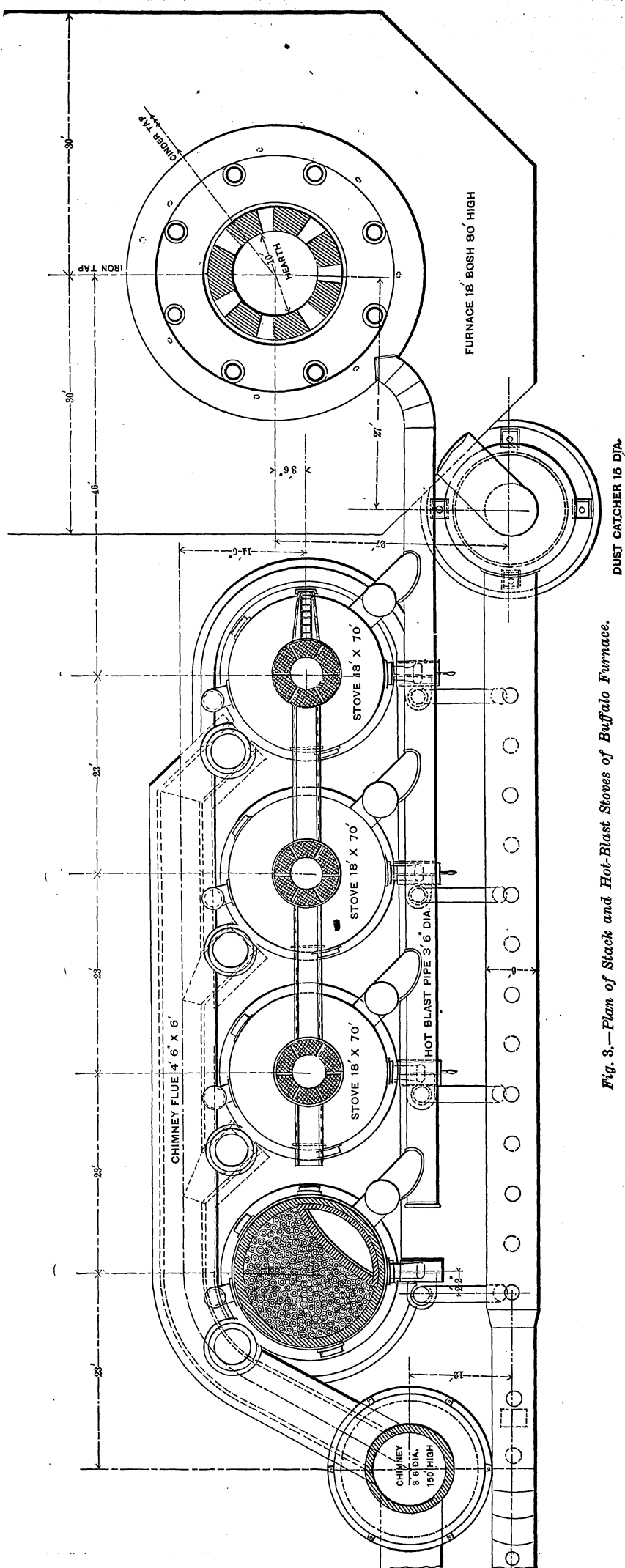


Fig. 3.—Plan of Stack and Hot-Blast Stoves of Buffalo Furnace.

creasing its efficiency. The pigs are carried to the doors along the sides of the cast house where heavy castings with a wedge-shaped upper edge are provided. Being thrown upon them from above, the iron is at once broken and is ready for the grader. The shipping bank is flush with the platforms of the cars on depressed tracks running along the sides of the cast houses.

The stack proper, Figs. 2 and 3, is flanked first by a washer, through which the furnace gas is first passed. Alongside are the three hot-blast stoves, with room for a fourth; beyond the draft stack, and

The principal dimensions of the stack proper are clearly shown in the accompanying section, Fig. 2. The stack is 80 feet high, and at present is lined to 18 feet, as shown, but can be lined to 22 feet, which would allow of more economical production of Bessemer pig, should it be deemed profitable to turn to that grade. Special care has been exercised in making the foundation, there being 42 feet of piling followed by 5 feet of concrete, then masonry and red brick, as shown in the section. Below the iron notch there is an 18-inch well, the dimensions of the hearth being 10 feet. The bosh is cooled with one row

and the inch steel shell is a locomotive fire-box of 3-inch by 4-inch iron, and through this opening the casting trough extends into the brick work of the hearth. Water can thus extend entirely around the furnace hearth and the fire box can be completely surrounded by water or protected by a spray pipe as the occasion may require. It is also arranged so water may be entirely cut off in front at will. Forming the mantle are two rows of beams, one octagon and the other a circle.

It will be observed from the drawing that the upper part of the stack is lined with a different brick, the object being to

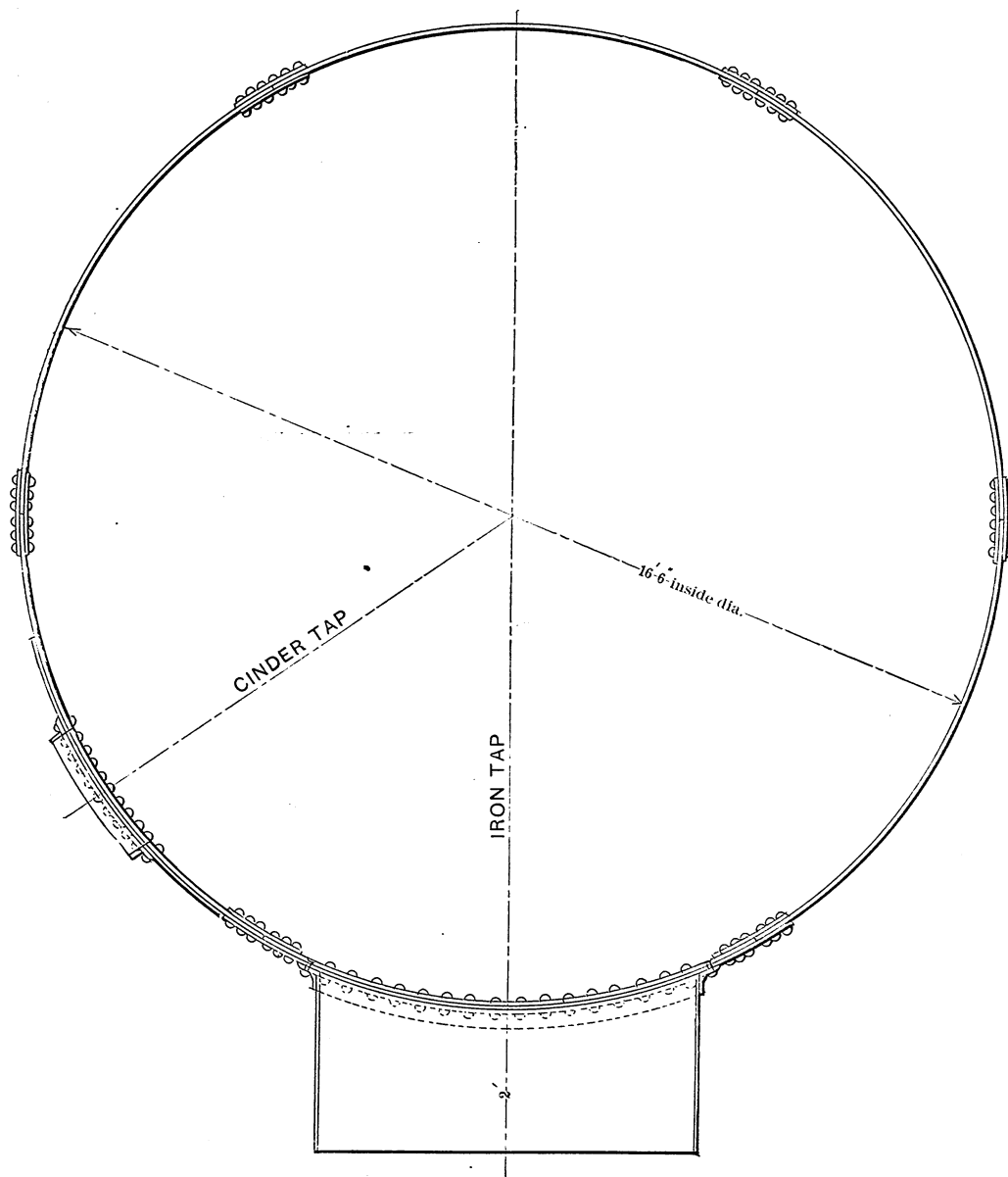


Fig. 4.—Plan View of Casing.

beyond that again, the battery of boilers. This, it will be noted, gives one line of gas flue, which is 7 feet in diameter for 230 feet, and drops to a 5-foot diameter on reaching the last battery of boilers. Back of the boiler house, 140 x 60 feet, stands the engine house, 50 x 85 feet, and the pumping outfit, flanked by a tank 16 feet diameter and 50 feet high. A 20-inch water main reaches the Buffalo Creek, immediately back of the pump house. Further on is the metal house, to which allusion has been made. A laboratory and scale house, and a well-appointed office building complete our general review of the plant. The company have over two miles of solid tracks, and have direct connection with New York, Lake Erie & Western Railroad, and also with the Lake Shore & Michigan Southern Railroad.

of Kennedy plates near the tuyeres, followed above by four rows of Gayley plates 30 inches apart. The total weight of the tuyeres, with 6-inch nozzle, together with the tuyere coolers and bosh plates, is 40,000 pounds of bronze.

The arrangement of the main water supply is indicated in the furnace section. The lower part of the trough is in the form of a compartment which forms the supply pipe for tuyeres, &c. The supply pipe and waste water trough being in one section take up less room than they would otherwise.

The hearth casing has some special features of interest, which are indicated in the drawings, Figs. 4 to 7 inclusive. The water well extends clear around the furnace, an additional plate of $\frac{1}{4}$ -inch steel being in front. Between this extra plate

prevent the usual rapid wearing away of the brick work near the stock line. Hard fire brick made of No. 2 plastic clay were used.

The charging bell, which has a 10-foot diameter, possesses some new features, indicated in the engraving, Fig. 8. A large slot extends through the upper half of the bell through which extends a heavy forged steel bar. To each end of this bar is attached a heavy rod which fastens to the lever working the bell. These rods are over 5 feet apart and allow the charging car to pass between them. The steel bar which passes through the bell is fitted to the center of the slot on the principle of a ball joint, and the bell swings as freely on that ball joint as it would if suspended by the usual single rod from the apex.

The charging cars, as they come up on

Gold and Silver in the United States.

The production of gold in the United States during the year 1892 is given by the Director of the Mint in his report as about \$33,000,000 in value, approximating the average production of recent years. Of silver the mines of this country yielded

450,968 and the exports \$37,541,801, an excess of silver exports of \$6,090,333. During the same period gold imports aggregated \$18,163,056 and exports \$76,736,592, showing a net loss of gold last year of \$58,570,536. On January 1, 1893, there was an estimated stock of gold and silver in the United States of \$1,243,153,385, of which \$649,788,020 was gold and

The Davis-Farrar Triple-Expansion Engine.

The triple expansion yacht engine which we illustrate has cylinders 7 x 10½ x 16½ inches in diameter by 8 inches stroke. The high-pressure and intermediate-pressure cylinders have piston valves in cages bolted

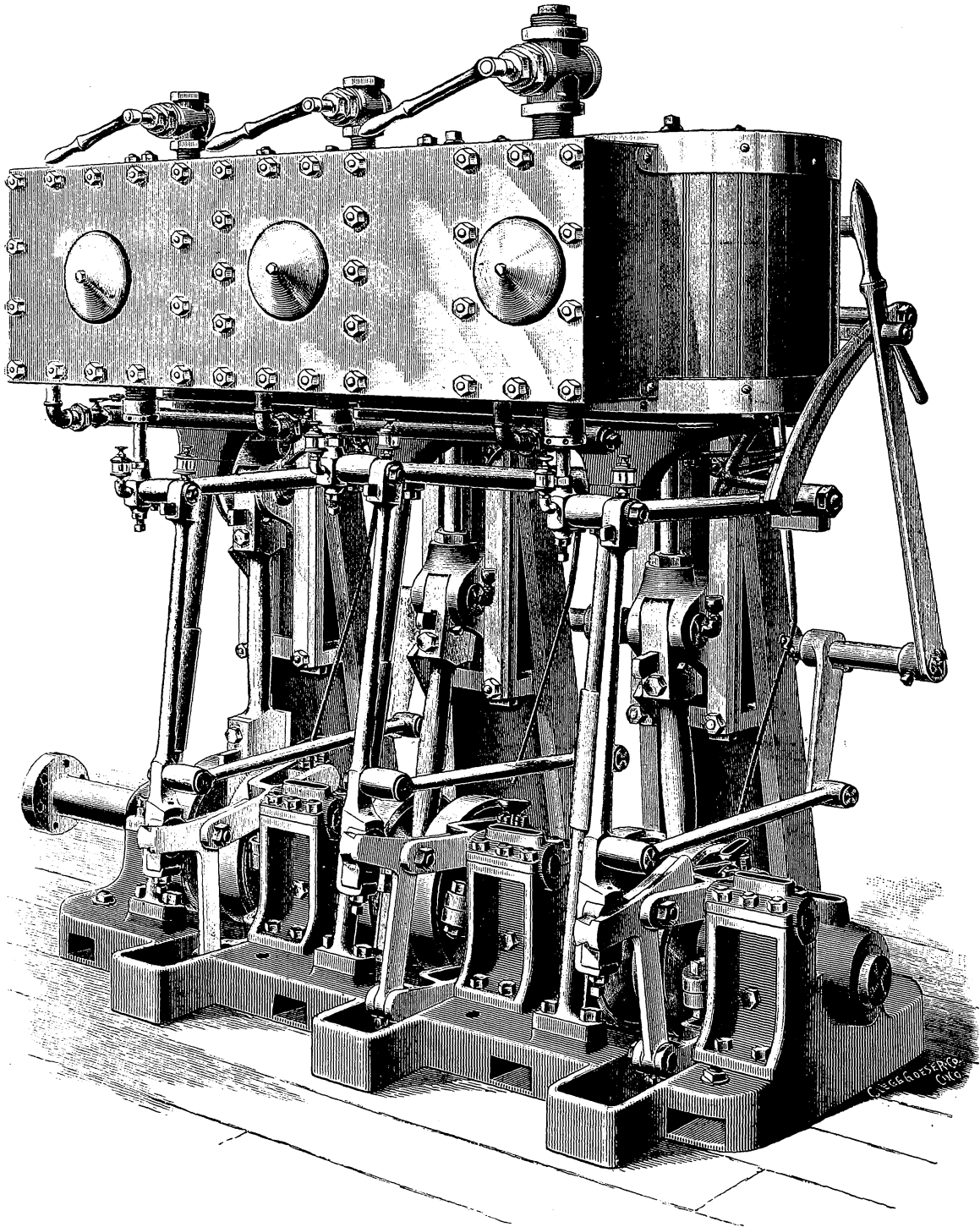


Fig. 1.—Front View.

THE DAVIS-FARRAR TRIPLE-EXPANSION YACHT ENGINE.

about 58,000,000 ounces, of the commercial value, at the average price of silver during the year, of \$50,750,000, and of the coining value in silver dollars of \$74,989,900. This is a falling off of 330,000 ounces from the product of 1891. The amount of silver purchased by the Government during the year was 54,129,725 ounces, costing \$47,394,291, an average of 87½ cents per ounce. From this silver 6,333,240 silver dollars were coined during the year. Silver imports aggregated \$31,-

\$593,365,365 silver. It appears that the stock of gold in 1892 fell off to the extent of \$39,000,000, while the stock of silver increased \$46,000,000. The stock of money in actual circulation (exclusive of the amount in the treasury) was \$1,011,321,753 on January 1, 1893, showing an increase during the year of \$18,929,124.

The Government of Honduras has been overthrown and General Bonilla proclaimed president.

to false seats to facilitate removal for repairs when necessary. The low-pressure cylinder has the double-ported Allen valve. All are operated by a radial valve gear designed by Leonard D. Davis of the Davis-Farrar Company of Erie, Pa., the builders of these engines. The cylinders are supported at the rear by hollow cast columns, the metal being disposed so as to give rigidity without excessive weight, and at the front by polished wrought-steel columns, making the working parts very ac-

cessible and open for inspection. The cross head is of polished cast steel, carrying a slipper guide at the back, operating in slides formed by the face of the cast column, and with wrought guides to take the thrust when backing. The guides, as well as all the working parts, are adjustable for wear. The cross-head pin is a taper fit with a substantial dowel

key type, requiring less care in taking up wear than the forked type. The crank shaft has the coupling forged solid with it to economize weight. The cranks have polished disks containing counterbalance weights made under the L. G. Skinner patent. The cylinder heads and steam-chest covers are highly polished, as are all parts that can be finished. The pillow blocks

rear being operated by two levers, to which they are connected, the end being within convenient reach of the engineer when standing at the throttle.

The engines have been designed for high duty and steam pressure, care being taken not to reduce weights beyond the safe limit. The base, as well as frames, are cored out to get the greatest strength and rigidity with the minimum weight. The engines during two years' service in a heavy 80-foot cruising yacht, have repeatedly on all day runs, under 180 to 190 pounds steam pressure, turned a 42-inch wheel, 6 foot pitch, 300 revolutions per minute, without warm journals or pins. Great care is taken with the "balancing" of the engines, the steam distribution, as well as the weight in counter balances being determined by extended experiments.

The valve gear shown in Figs. 3 and 4 is extremely simple. Although but one valve is used, it gives a steam distribution similar to the "Corliss valve motion," the fast travel of the valve being when the port is opening and closing for steam, the slow travel when the port is fully open and during exhaust. Its construction and action can be understood by Figs. 3 and 4.

Fig. 3 shows the gear in skeleton. It consists of an ordinary eccentric and eccentric strap, with a pin upon its top and bottom sides; a link connected to the pin on the top of the eccentric strap, extending horizontally 12 inches and pivoted at a point 9 inches from the center of the pin at the top of the eccentric strap. This fixed point is supported by a stand bolted to the engine base. At the outer end of this link a T shaped quadrant is carried, the lower arm of which extends downward and is connected with the bottom of the eccentric strap by the lower horizontal link. It will be seen that the vertical throw of the eccentric operating the upper link or lever over its fixed point or fulcrum carries its outer end with the quadrant a distance equal to the lap and lead of the valve, while the horizontal throw of the eccentric imparts a "rocking motion" to the quadrant. It is, therefore, obvious that as the eccentric rod is moved from the center toward either end the port is opened more for steam or the engine reversed, and that there can be no port opening for admission other than the lead when the eccentric rod is in the center of the quadrant. We would observe that the eccentric is practically a crank, that it has both vertical and horizontal throw, and that there are fast and slow points of travel—as the piston travels in the cylinder of an engine, faster as the crank approaches half stroke and slower when the crank is upon the top and bottom centers. The vertical throw of the eccentric is used to move the valve a distance equal to the lap and lead—nothing more—and the horizontal throw is used for port opening. Each has its fast and slow travel. So far as moving the valve is concerned, the relation is the same as that of the piston of an engine and its crank.

In the next drawing it will be seen that the engine is on the bottom center. The throw of the eccentric, being down, has raised the valve K a distance equal to the lap and lead, and it is ready to take steam. At the same time, the full horizontal throw, its fast travel, is ready to move the lower arm G of the quadrant to the right and rock its outer end with the eccentric rod up, giving the port opening with its quickest travel. The next cut shows the port open. It will be seen that the beginning of the vertical throw would tend to close the port, while the horizontal throw, rocking the quadrant more, maintains the valve in its position. The one operating against the other causes the valve to pause or slow up. In the last figure it will be seen that

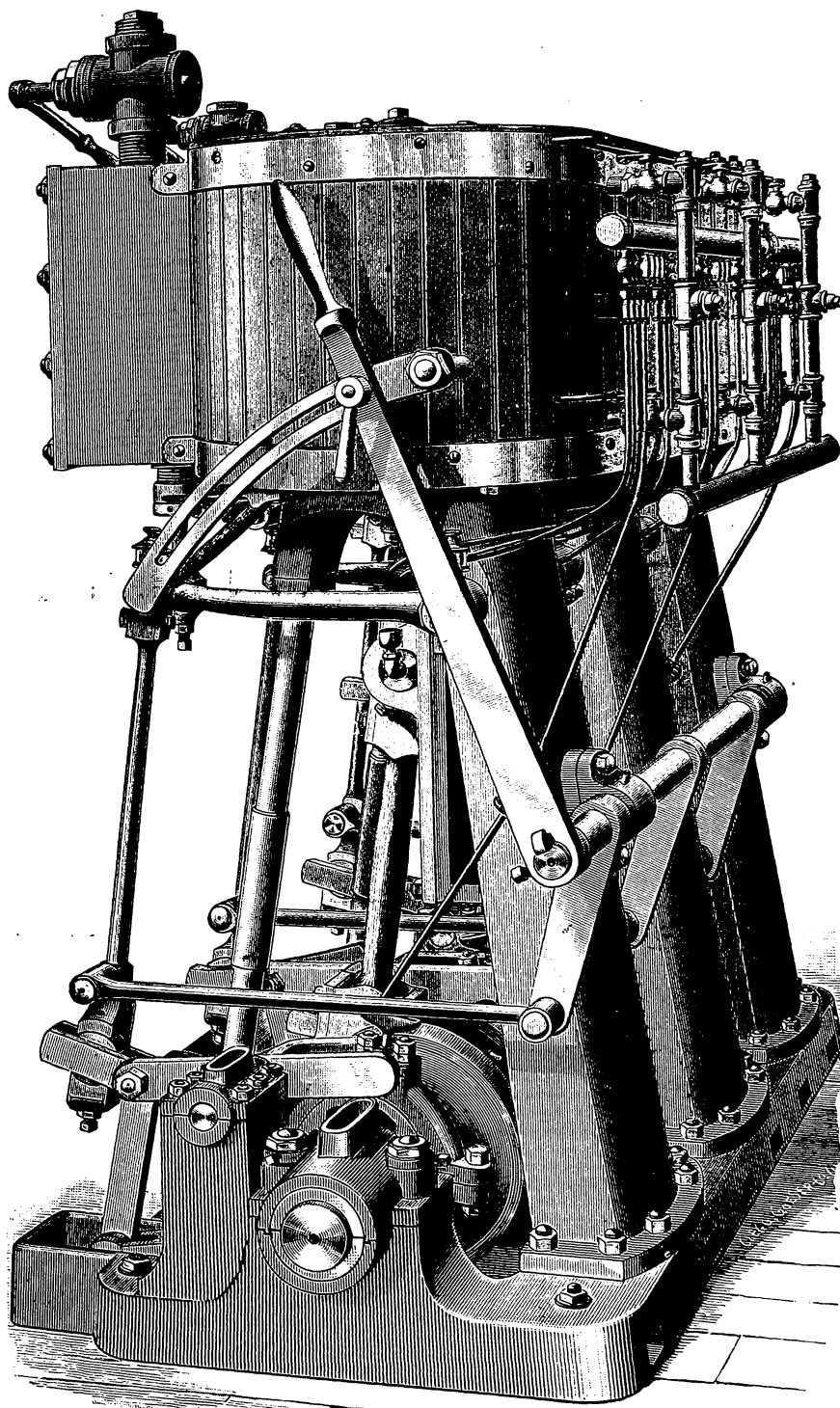


Fig. 2.—End View.

THE DAVIS-FARRAR TRIPLE-EXPANSION YACHT ENGINE.

on one end and a split taper bush on the other, secured and joined with a screw, a cap fitting snugly between the screw head and face of the cross head, completely covering the joint and giving a finished appearance to the whole. The pin is hollow and is oiled from the center. The brasses are grooved to thoroughly distribute oil over the wearing surfaces. The connecting rods are of the strap and

are bored out and have removable bushings. The method of oiling is shown in the end view. A brass pipe bracketed to the back of the cylinders has small copper pipes branching off to convey oil to the different journals, each being provided with a cock near the main pipe to regulate the flow of oil as desired. All drip connections are united to one main drip connection, the drip cocks at the front and

the vertical throw is at its fastest point, while the horizontal movement is at its slowest, and will have little effect to oppose it.

Two years' use of this valve gear has developed no faults or weakness, while the steam distribution is all that could be desired, giving as it does a quick opening and closing, maintaining a full port opening for admission and free exhaust, while there is no perceptible difference in the events of induction, release and compression on either stroke, from maximum point of cut off to zero.

Carborundum.

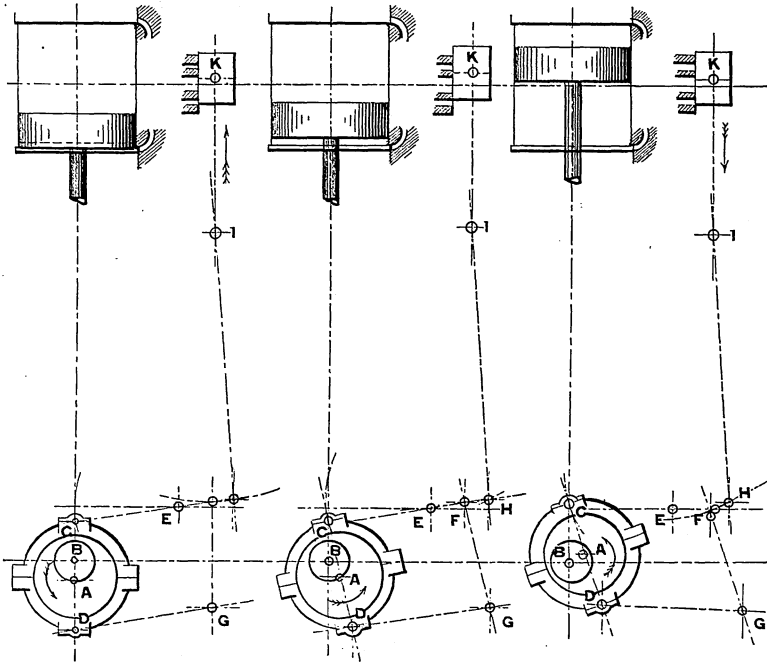
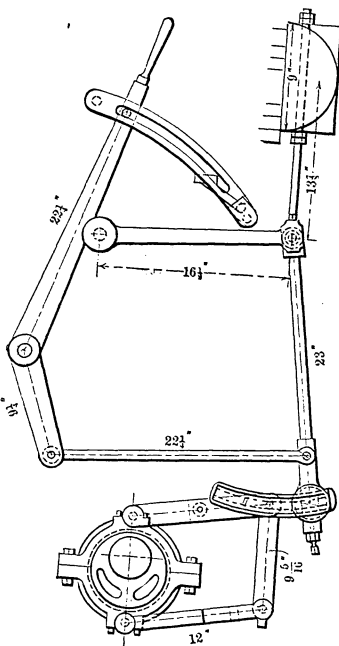
A new abrasive material has lately been patented by Edward G. Acheson of Monongahela, Pa., which appears likely to become of considerable importance. The material, which has been named Carborundum, is, as nearly as can be determined, a compound consisting solely of

it has been successfully used for cutting diamonds, being the only substance other than the diamond itself which has ever been able to accomplish this work. The application of the material for cutting and polishing glass, porcelain, steel, cast iron and other hard substances is said to be steadily increasing.

The Acid Bessemer Process. — A. Kaysser discusses the question as to the linings of acid converters. At the works of the Sociedad de Altos Hornos, at Bilbao, the difficulty is the greater in that all the fire-resisting material required at the works is brought from the United Kingdom. The author's endeavor, when engaged as the manager of the steel-making department at these works, was to lengthen the life of the bottoms and of the lining of the converter body. For this purpose it was necessary to consider what were the substances which attacked this lining in addition to iron and manganese. If these were the only substances present in the

some difficulty. Besides other points, it was customary for the blower, if certain red lines to the left of the sodium lines were not to be observed, to keep on adding cold scrap until these lines became visible. In a hot blow calcium does not burn, but this happens when the blow is cold or has been cooled down. Consequently, the author considers that the red lines referred to, which became visible on the left of the sodium line, are in reality due to calcium. The author illustrates his remarks by a number of curves, giving the percentages of the various elements present in the metal during the several stages of four blows. Details relating to these charges are also given.

Calcium and Magnesium in Pig Iron. —A Kaysser gives the following partial analyses of pig iron made at the Altos Hornos Works at Bilbao, showing the presence of appreciable quantities of calcium and magnesium. As showing the influence exerted by these elements on the



Figs. 3 and 4.—Valve Gear.

THE DAVIS-FARRAR TRIPLE-EXPANSION YACHT ENGINE.

carbon and silicon, one atom of each element to a molecule, so that the chemical symbol of Carborundum is SiC. Physically it is a crystalline substance, very brilliant and usually of a dark color, although the color varies with the materials used in its preparation. The process of manufacture is simple and the materials inexpensive. As described in *Engineering News*, the process in general consists of subjecting a mixture of coke with silica, or silicate of alumina and a flux of common salt, to the action of the heat of an electric furnace. This is accomplished by forming an electric arc in the midst of the mass of material. When the chemical action is completed the products are removed from the furnace and the carborundum is freed from impurities by breaking it into small pieces and washing and drying it. The different-sized crystals are then graded.

The Carborundum Company, who have taken up the manufacture of the material, will, it is stated, shortly be able to produce about 500 pounds a day, when its present cost, the only obstacle which stands in the way of its general adoption for grinding purposes in place of emery, will, it is said, be reduced. One evidence of the extreme hardness of carborundum is that

iron charged into the converter which attacked the lining, then that pig iron made at the works which contained the largest quantity of manganese should have had the most destructive effect. This, however, was far from being the case, and the author was finally led to the conclusion that there must be some other attacking agent present in the pig iron. Analysis, as he anticipated, proved the presence of both calcium and magnesium. The iron was not examined for oxygen, so that it is just possible that both the calcium and the magnesium may have been present in the iron as entangled slag. Still, the author does not believe this to have been the case, and he points out as a reason for his belief that the ratio borne by the magnesium to the calcium in the iron was frequently greater than that existing in the slag from the blast furnace. Another cause for his belief lay in observations made during the blow. The metal was taken direct from the blast furnace, but the percentage of silicon present was liable to great variations, and the blow was watched by a spectroscope. As is well known, when the blow is a very hot one, the so-called carbon lines are not discernible. The regulation of the blow was consequently a matter of

acid lining of a Bessemer converter, the number of blows is also given, which a converter-bottom withstood when the metal referred to was being blown:

	Si.	Mn.	Ca.	Mg.	Number of blows.
1	3.36	1.06	0.21	0.07	....
2	1.76	1.02	0.26	0.07	10
3	2.00	1.02	0.07	0.05	17
4	2.03	1.21	0.09	...	15
5	2.43	...	0.15	0.12	14
6	1.96	1.06	0.27	0.03	13
7	1.87	0.97	0.29	0.38	12

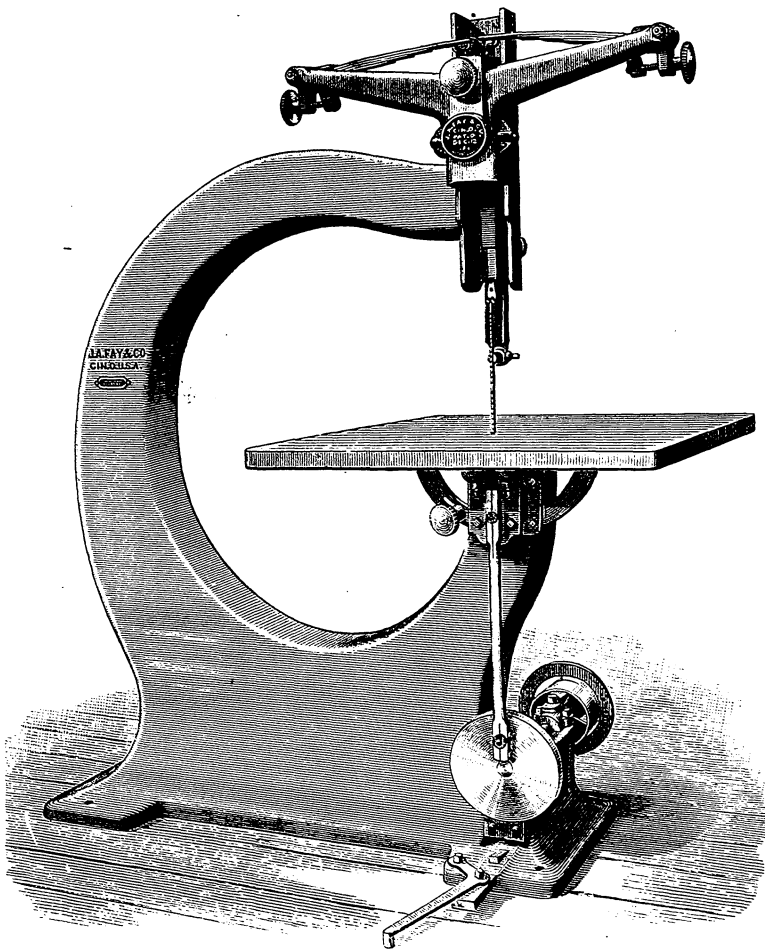
Protection to local industries in New South Wales has been recently exemplified by the decision of the Colonial Government that 20,000 tons of cast-iron pipes required for home use shall be made in the colony. The tenders of Glasgow firms for this contract averaged about \$28.80 per ton, whereas the accepted colonial figure is \$37. Thus the New South Wales Government is content to subsidize the home founder to the extent of \$164,000 on a contract which was offered to be executed for \$576,000.

The Fay & Egan Fret Scroll Saw.

The fret scroll saw here illustrated is designed for use in pattern shops, and for all external and internal curve sawing. The column is made in the cored form, has a broad base, and extends over the table to support the entire strain attachment, thereby obviating the necessity of supporting it by suspending braces from the ceiling. This form of column gives the machine a firmness while in operation not otherwise obtainable. The table is made of iron, and is 38 x 32 inches. The reciprocating parts are very light, to obviate, as far as possible, the effects of their inertia in upward and downward movements. It is adjustable to a bevel right or left of 30°. The tension of the

Steel Institute in 1890, that he is organizing a workingmen's expedition to visit the approaching World's Fair. The entire expense of those who are so fortunate as to be included in the party will be borne by the proprietors of the *News*. The readers of that paper decide who shall form the expedition by sending in ballots indicating their choice. The scheme is very creditable to Scotch newspaper enterprise. The workingmen selected will probably be asked to favor the readers of the *News* with their impressions, which will evoke some very interesting and perhaps valuable ideas.

The first-class battle ship "Magnificent," to be commenced at Chatham dockyard in England during the ensuing financial year,



THE FAY & EGAN FRET SCROLL SAW.

machine is flexible, the upper end of the saw being attached to a strap, which at its upper end is connected with a segment pulley having an eccentric roller, connecting with two steel leaf springs. This combination produces, in operating, an almost uniform tension throughout all parts of the stroke of the saw, the eccentricity of the roller being so adjusted that, as the saw is drawn in its downward stroke, the lessening flexibility of the springs is compensated for by the shortening leverage of the eccentric roller. The springs are attached to a sliding cross frame, adjustable to and from the table for different lengths of saws. It has an efficient brake and shipper attached for starting and stopping. The cross head is made adjustable, and can be quickly set to any desired rake.

This machine is built by the J. A. Fay & Egan Co. of Cincinnati, Ohio.

The *Iron Age* is advised by D. C. Thomson of the *Dundee Weekly News*, who visited this country with the Iron and

will be an improvement upon the "Royal Sovereign" class, and will be 390 feet in length, with a breadth of 75 feet. She is to be furnished with engines of 13,000 horsepower, capable of producing a speed of 18 knots under forced draft and 16½ knots with natural draft.

A hint to intending traders with China comes from the United States Consul at Hong Kong, in the shape of advice to American manufacturers. The Consul says that it is absurd to seek to introduce such machinery as saw and planing mills, mowing and threshing machines and harvesters into a country where there are no large farms, and where human labor is so cheap as to be a drag in the market.

The contract for furnishing the seven spring-return mortar carriages for the 12-inch breech-loading rifled mortars has been awarded to the West Point Foundry Company of New York, the lowest bidders, at \$6780 each.

The First Blast Furnace in America.

BY W. N. ADAMS, M.E., MINERAL CITY, VA.

(With Supplement.)

In the last edition of "Iron in All Ages," James M. Swank of Philadelphia adds much to the history he has been gathering for many years past of the iron belt in Northeastern Virginia, from the Potomac River through the counties of Stafford, Spotsylvania and Louisa.

It may be said that no other work published has attempted to clear away the fog of tradition and give proper credit to this section of the State for mining enterprises dating from the early part of the last century, and the inauguration of the first blast furnace practice on the continent—the first manufacture of pig iron by means of a forced blast.

Without question, it has been a long and tedious task to gather fragments of history into the concise shape presented in this book, and no one removed from the scene of action can properly appreciate the value of the gleanings. Nearly all records pertaining to the actual ore getting, smelting, freighting, &c.—a business of great magnitude at that early date (1714 to 1740)—have been lost or destroyed, so that a close acquaintance with the dwellers of the country while tramping the mineral belt from end to end during four years of investigations resulted in no data which would admit of fixing the site of the working plants of the ironmasters.

By accident some of the historical notes of R. A. Brock, Richmond, Va., came into my possession, which led to a correspondence and the collection of materials for the reading of a paper on this subject, during the preparation of which I had the honor of discovering the first blast furnace structure erected by Governor Spotswood, elsewhere illustrated as brought to light from the virgin forest.

Since the publication of that paper by the American Institute of Mining Engineers, in February, 1891, a good deal of new matter has been unearthed which I think fully answers Mr. Swank's question, on page 259, viz.: "Did Governor Spotswood or the Germans, acting independently of him, set on foot the first of these enterprises?"

The opening of one page of events which belongs to this early period of winning iron, I trust may be but the beginning of a series of articles which will tend to place us in possession of all the data now lacking to perfect the history of the first ironmasters of Virginia.

The few and incomplete scraps of history given us to study tell of a small band of refugees who landed at Rappahannock, in tidewater, Virginia; of the wrangling over the passage money which they were unable to discharge (finally paid by Governor Spotswood); of the transportation of this motley and worn out party up the Rappahannock river to Fredricksburg, and their moving into the wilderness. We have nothing but threads of official actions upon which to weave a narrative of their doings after a landing was effected upon Virginia's soil, the first of which is the communication in 1714 of Governor Spotswood to Ye Lords Commissioners of Trade and Plantations. "The act for exempting certain German Protestants from ye payment of Levys is made in favor of several families of that nation, who upon the encouragement of Baron De Graffenreidt came over hither in the hopes of finding out mines, but the Baron's misfortunes obliged him to leave the country before their arrival. They have been settled on ye Frontiers of Rappahannock

and subsisted chiefly at my charge and on the contributions of some gentlemen that have a prospect of being reimbursed by their labors."

If ever an opportunity was offered for the exercise of a liberal charity (the quality seldom found in military camps) it was called for in the case of this community, written about in so terse a manner by the Governor. They had been driven to this harbor of refuge (one of many offered them on English soil by the kindly act of Queen Anne) through the discriminating religious decrees of the period, which scattered them over the world at almost a day's notice. Brought to this country under such circumstances, and in almost all cases sent inland to form the border line of the then crude civilization, we can well understand that military orders demanded much which their former lives had unfitted them to fulfill.*

Volumes of romance and reality could have been woven from the materials furnished by this oppressed and isolated colony in the northern neck of the Rappahannock, yet very little of a historical character is to be found outside of the notes transcribed to round out family genealogy; not a single work to do justice to the patience and stolidity which alone made this peculiar race of political and religious refugees one of the most remarkable of the many communities settling upon these shores anterior to the Revolutionary War.

Of the wonderful progress made by all other fragments of the original band of Palatines I need not here speak, as they have a written history of strength and truth in every section of the land they inhabit. Living in the atmosphere of this fair land, which was blessed by the early efforts of a colony more nearly akin to my own profession, in a land which will be known for many years to come as a mining section of almost special value and interest, and inasmuch as I have been favored with the acquaintance of so many of the descendants of these early colonists, and have prospected and unearthed something of the lives of this nearly forgotten people, as well as much of the work they did to entitle them to a place in history, I feel in some manner qualified to present to our profession their claims to notice and to our gratitude for a work well done.

We know that somewhere in the region between the falls of the Rappahannock River and Germanna, there had been established, as early as 1676, a fort or outpost for protection against Indian incursions. This immediate neighborhood has been a rendezvous for Indian tribes for ages past, the best of fishing and curing grounds being located on the lands along the rivers, as well as mines for ochers, soapstone and utensils close at hand. That it was a well-known and possibly a valuable mineral section is a matter of record in connection with the memorable passage of the Blue Ridge, accomplished by Governor Spotswood and his royal retinue in the year 1710, shortly after his accession to the Governorship of the colony of Virginia.

The facts which led up to the occupation of this territory by the German Protestants may be chronicled as follows: Governor Spotswood was born in Tangier, Africa, then an English colony, his father being the resident surgeon to its Governor, the Earl of Middleton, and to the garrison,

and knew no life from childhood up except as associated with the pomp, ceremony and intrigue of domestic circles in English high life, or the hardships, sufferings and deprivations of the military campaigner of that period. He served with distinction under the Duke of Marlborough, was dangerously wounded in the breast at the battle of Blenheim, and in after years often showed the four-pound cannon ball which struck him during that engagement.

He came to the colony of Virginia in June, 1710, in the capacity of deputy-lieutenant to the Earl of Orkney, Governor and commander-in-chief of the colony. In reality, however, he was the Governor, as the Earl never came to this country and never performed the least act of office personally, although for 40 years continuing to draw the official revenues for his supposed services to the Crown. In 1711 he was called upon to quell an insurrection which promised to subvert all regular colonial government, and also to exercise his peculiar qualifications as a mediator in conciliating the several Indian tribes located near by the colonial settlements, and to prevent them from joining the Tuscaroras in the bloody warfare waged all along the coast. His conduct of this war with the Tuscaroras and the final and lasting peace with them in 1714 will be remembered as one of the few examples of vigorous campaigning and constant fighting (notwithstanding the lukewarmness of the Assembly of Virginia and the fire-in-the-rear of the majority of the people) which resulted in scattering the Indians into remote districts until starvation compelled the cessation of hostilities, after which his humanity in treating with the repentant tribes won the admiration and respect of all the numerous Indians bands in the Middle and Southern parts of the country.

It was during this period of unusual activity in military operations that from some of the older manuscripts we obtain the first information of his search for mines.

May 15, 1712, his correspondence to the crown officials in England advises the retaining of all rights to the mines in North Carolina, and a reservation of one-fifth the gold, one-tenth the silver found on crown lands.

July, 1712. Baron de Graffenreidt was reported as just returned from an expedition to the head waters of the Potomac.

June 13, 1713, he writes to Colonel Blakiston, London, of another mine, and asks his prudential management of matters to secure grants.

September 14, 1713, he writes to the same party advising him to pay fees on claims to mines already agreed to be taken over, and says, "he must personally head an expedition to punish the Five Nations to the west, who make incursions to assist the Tuscaroras."

November 6, 1713, he again writes in regard to those Indians suing for peace, and says, "the remnants of the tribe are well scattered by the active war lately waged against them."

March 9, 1714, he writes a letter relative to the conclusion of a treaty of peace with the Tributary and Tuscarora tribes.

March 13, 1714, he writes to Colonel Blakiston what had been done in regard to the mines, and quotes the sentiments of the Baron, who proposed certain transfers of miners: "We must risque censure of the others in transporting foreigners into the Colony. I hope the undertaking will not have the same consequences, but it is, however, vain to look at the worst side of a business which is so far engaged in and must go through."

July 21, 1714: "As the Tuscaroras had departed for their former lands south, in order to supply that part which was to have been converted by the Tuscaroras, I have placed here a number of Protestant

Germans, built them a Fort and finished it with 2 pieces of cannon and some ammunition, which will awe the straggling parties of Northern Indians and be a good barrier for all that part of the country. These Germans were invited over by the Baron de Graffenreidt, who has Her Majesty's letter to ye Governor of Virginia, to furnish them with land upon their arrival. They are generally such as have been employed in their own country as miners, and say they are satisfied there are divers kinds of minerals in those upper parts of the country where they are settled, and even a good appearance of Silver Oar, but that it is impossible for any man to know whether these mines will turn to any account without digging some depth in the earth, a liberty I shall not give them until I receive an answer to what I represented to your Lordships, covering your ascertaining her Majesty's share, &c."

December 1, 1714, the news of the death of the Queen having been received some time before, he writes to Colonel Blakiston his "repeated acknowledgments for your endeavors in relation to the affair of the mines. At the same time, I hope you will be pleased to renew your instances to his present Majesty, with whom (as being a Prince with more knowledge in the name of mines than, I believe, any in Europe) it may be much easier to prevail, and perhaps to obtain as moderate terms as ye adventurers in his own territory in Germany had. It may be also some consideration with his Majesty that these mines are to be wrought by persons of the same Nation and Religion, as I am sure it ought with us; that they will be a vast charge without any prospect of benefit till they can be set to work."

"I have obtained for them from the Assembly an exception of all taxes for seven years, which may be an encouragement to others to come over, but I hope their passage will be at their own cost."

January 27, 1715, he writes: "The last Assembly passed an act to disband the Rangers . . . and apply the pay they would have received to such other uses as I judged necessary for the security of the frontiers. In pursuance of this trust I took a progress last summer cross the frontiers of this colony, . . . erected another fort on the south branch of the Rappahannock River for ye German Protestants whom I have mentioned before, to serve as a barrier against Northern Indians."

This is all the data bearing directly upon this subject which I have been able to glean of late, but it fixes without much question the fact that during a time within the dates March 13 and July 21, 1714, the German Protestants landed on Virginia shores and were located in the wilderness about Germanna. A letter written in 1846 by John R. Spotswood speaks of a valuable manuscript prepared by Governor Spotswood, giving a history of the colony from the time of his arrival to a period near to the date of his death. This manuscript was carried to England by a Mr. Featherstonhaugh, an English geologist, who traveled through America for scientific purposes. May it not be possible to recover this manuscript, and thus throw a flood of light upon political and personal history of that period? It must have been with a view to publication that so valuable a document was sent to England, and the recovery of it at this time would add greatly to the delight and inspiration which comes from the actual contact with materials and substances, a part of that beginning of an industry of such moment to the colony.

It has already been stated that a disastrous fire, which destroyed the mansion of the Spotswood heirs, living upon the original grant near Germanna, is responsible for the absence of authentic data with regard to the personal career of the

*The Palatinates turn up in many sections of this country. Louvois, under direction of Louis XIV. must have driven out a great number of them from the lower Palatinate of the Rhine, for we learn that over 3000 of them landed at New York in one body; many in Pennsylvania, in Virginia and North Carolina. De Graffenreidt undertook to settle the latter colony regardless of the rights and the protests of the Tuscaroras, and on one of his expeditions up the Neuse River was taken prisoner and came near being burned at the stake. One of his party named Lawson, a surveyor, met his death in this manner during a trip made in 1711.



No. 5.—The dam on Mine Run. About 1,000 feet from the furnace.
No. 7.—Commencing excavation work, Wednesday morning, Nov. 2, 1892. North side.
No. 6.—Clearing away of undergrowth to reach furnace. South side.

No. 3.—Looking toward charcoal and ore beds. Original condition.
No. 1.—Discovery opening, leading to rear of hosh.
No. 9.—Base of black-walnut tree, after clearing work.
No. 8.—Progress of work, south side. Black-walnut tree over furnace.

No. 10.—Commencing work.
No. 18.—Completed section of first iron furnace taken at 2 p.m.
No. 13.—Friday morning. Mass of earth.

THE FIRST IRON FURNACE BUILT IN AMERICA

Located and Excavated by



ing excavation work. South side.
excavation, showing mouth of the
e built in America. Photograph
Nov. 5, 1892.
broken stone and mortar in front of furnace.

No. 2.—Looking toward furnace from casting bed. Original condition.

No. 15.—Completed work, Saturday, Nov. 5, 1892. Looking up the tail race.

No. 14.—Friday night. Pieces of cast iron, glass, slate, etc.,
found here.

No. 4.—On the race-way. Looking toward the dam.

No. 12.—Progress of work, Thursday.

No. 11.—Progress of work, north side.

No. 17.—On the slag dumps, 30 feet high. Our traveling wagon.

No. 16.—Along the tail race, Saturday noon. Half-
melted metal found here.

ICA, BY GOVERNOR SPOTSWOOD OF VIRGINIA.

Wm. H. ADAMS, Mineral City, Va.

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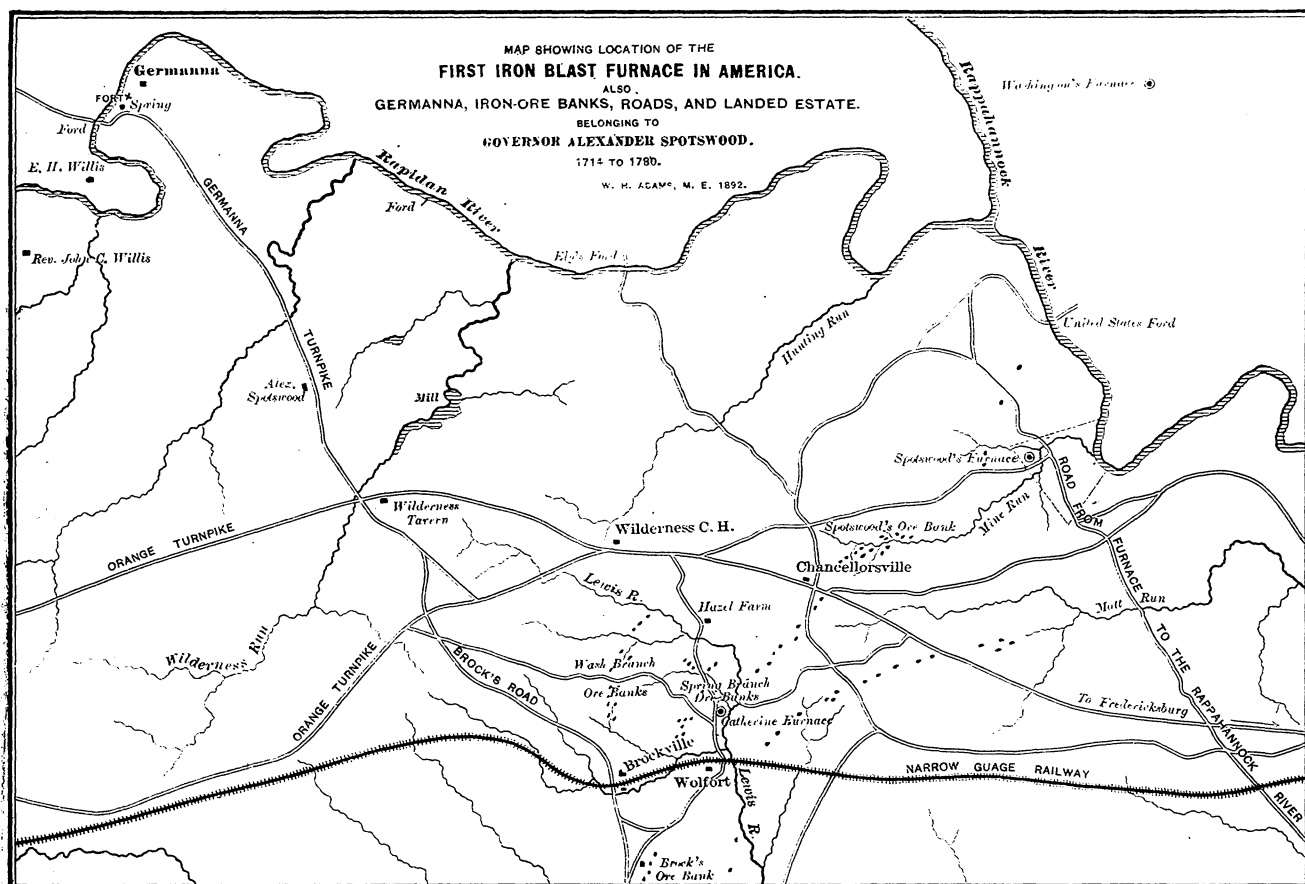
Governor. It cannot be learned that any of the books or accounts of the business done during the period of mining and smelting were ever preserved by the family. There are a few of these in the hands of others, and by these we are able to learn the prices of articles of cast iron which were manufactured at the close of the furnace business.

An authentic record by one of the first gentlemen of the period, Col. William Byrd, second of the name, gives us such facts and figures of the operations as are of special value in the absence of the actual records of the business done. I am sure that quotations from Colonel Byrd's "Progress to the Mines" will be considered as evidence of the fact, so often noted of the man, i.e., that he was one of the closest observers of his time, the preservation of his writings enabling us to complete the

pick-axe man at work a whole year to search if there be a sufficient quantity, without which it would be a very rash undertaking. That I should also have a skilled person to try the richness of the ore. Nor is it great advantage to have it exceedingly rich, because it then will yield brittle iron, which is not valuable. But the way to have it tough is to mix poor ore and rich together, which makes the poorer sort extremely necessary for the production of the best iron. He told me after I was certain my ore was good and plentiful enough, my next enquiry ought to be how far it lies from a stream proper to build a furnace upon, and again what distance that furnace will be from water carriage, because the charge of carting a great way is very heavy, and eats out a great part of the profit. That this was the misfortunes of the mines at Fredericks-

land and negroes. But then it behooved me to be fully informed of the whole matter myself to prevent being imposed upon; and if any offered to put tricks upon me, to punish them as they deserved.

"After breakfast we took a walk to the principal mine, about a mile from the furnace, where they had sunk in some places about 15 or 20 feet. The operator, Mr. Gordon, raised the oar for which he was to have, by contract, one sixth per cart-load of 26 hundredweight. This man was obliged to hire all the laborers he wants for this work of the company at the rate of 25/ a month, and for all that he was able to clear £40 a year for himself. On our return we saw near the furnace large heaps of mine with charcoal mixed with it, a stratum of each alternately. To this they put fire, which, in a little time, spreads through the whole heap and cal-



link in the chain of events inaugurated by Governor Spotswood.

Colonel Byrd started from Richmond during the summer of 1782 on horseback and after two days' travel he crossed the plateau from the South to the North Anna rivers, arriving at the Fredericksville furnace, which is about eight miles northeast of Mineral City. After his introduction to the manager in charge, he says:

"I found Mr. Chiswell a sensible well-bred man, and very frank in communicating his knowledge in the mystery of making iron, wherein he has had long experience. I told him I was coming to spy the land and inform myself of the expense of carrying on an iron work with effect. That I sought my instruction from him, who understood the whole mystery, having gained full instructions in every part of it; only I was very sorry he had bought his experience so very dear. He answered that he would with great sincerity let me into the little knowledge he had, and so we immediately entered upon the business. He assured me the first step I was to take was to acquaint myself fully with the quantity and quality of my ore. For that reason I ought to keep a good

ville, where they were obliged to cart the ore a mile to the furnace, and after 'twas run into iron, to carry that 24 miles over an uneven road to Rappahannock River, below Fredericksburg, to a plantation the company rented of Colonel Page. . . . He told me further that 120 slaves, including women, were necessary to carry on the business of an iron work, and the more Virginians among them the better; tho' in that number he comprehended carters, colliers, and those that planted corn. If there should be much carting, it would require 1600 barrels (8000 bushels) of corn yearly to support the people and the cattle employed; nor does that quantity suffice at Fredericksville. That if all these circumstances should happily concur, and you could procure honest colliers and firemen, which will be difficult to do, you could easily run 800 tons of sow iron a year. The whole charge of freight, customs, commissions, and other expenses in England will not exceed 30/ a tun, and 'twill commonly sell for £4 10s. So that, allowing the 10/ for accidents, you may reasonably expect to clear a profit of £4, which, being multiplied by 800, will amount to £3200 a year to pay you for the

cines the oar, which afterward crumbles into small pieces fit for the furnace. There are likewise a mighty quantity of limestone brought from Bristol by way of ballast at 2/6 a tun, which they are at the trouble to cart hither from the Rappahannock River, but contrive to do it when the carts return from the carrying of iron. They put this in the furnace with the iron oar in the proportion of one ton of stone to ten tons of oar, with the design to absorb the sulphur out of the iron, which would otherwise make it brittle. And, if that be the use of it, oyster shell would certainly do as well as limestone, being altogether as strong an alkali, if not stronger. The founders who never tried either of these will, by no means, be persuaded to go out of their way, though the reason of the thing be never so evident. I observed the richer part of the mine to be of a dark color, mixed with rust, which was laid in a heap by itself, and so was the poor, which was a liver or brick color.

"Close by the furnace stood a very spacious housefull of charcoal, holding at least 400 loads, which will be burnt in three months. The fire in the furnace is blown by two mighty pair of bellows that

cost £100 each, and these bellows are moved by a great wheel of 26-foot diameter. The wheel is carried around by a small stream of water, conveyed about 350 yards over land in a trough from a pond made by a wooden dam. The furnace is built of brick, but had been idle since May for want of corn to support the cattle When the furnace blows it makes about 20 tons a week.

"The sow iron is in the figure of a half-round, about two feet and a half long, weighing 60 to 70 pounds, whereof 3000 pound weight makes a cart load drawn by eight oxen, which are commonly shod to save their hoofs. The company was formed as follows: Fritz Williams took up the mine tract, and had the address to draw in the Governor (Spotswood), Captain Pearse, Dr. Nicholas and Mr. Chiswell to be jointly concerned with him, by which contrivance he got a good price for the land, and then when he had very little out of pocket, sold his share to Mr. Nelson for £500, and of these gentlemen the company at present consists. Mr. Chiswell is the only person amongst them that knows anything of the matter. The owners of the furnace had invested about £12,000 in land, negroes, cattle, &c.; my friend told me there was a Mr. Harrison in England, who is so universal a dealer in all sorts of iron, that he can govern the market just as he pleased. That it was by his artful management that our iron from the Plantations sold for less than that made in England, though it was generally reckoned much better. That ours would hardly fetch £6 a Tun, when theirs fetched 7 or 8, purely to serve that Man's interest. Then he explained the several charges upon our sow iron after it was put on board the ships. That in the first place it paid 7/6 a ton for freight, being just so much clear gain to the Ships which carry it as Ballast, or wedge it in among the hogsheds. When it gets Home, it pays 3/9 customs. These articles together make no more than 11/3 and yet the merchants by their great Skill in Multiplying Charges swell the account up to 30/ a Tun by the time it gets out of their hands, and they are continually adding more and more, as they are serving us in our Accounts of Tobacco. He told me a strange thing about steel, that the making of the best remains at this day a profound secret in the breasts of the few, and therefore it is in danger of being lost, as the art of staining of glass, and many others have been. He could only tell me they used Beach wood in the making of it in Europe, and burnt it a considerable time in Powder of Charcoal, but the mystery lies in the liquor they quench it in."

From the best information to be gained this furnace at Fredericksville, built at large expense and by the most careful of workmen, who came from England for the express purpose, ran but seven years and went out of blast for lack of ores of sufficiently high grade to make the enterprise remunerative.

I have been much interested lately in excavating at the base of this structure and outlining the workmanship—all of the parts which have been buried for the past 170 years appearing as perfect as when built. Quantities of the iron, in all shapes and with the brands plainly showing; wrought-iron nails used to repair the bellows, wrought-iron bars and wedges, cast-iron gates, &c., &c., rewarding me for the search. There are well carved names on the sandstone blocks and bricks which make up the walls and base of the furnace, and the furnace itself seems to have just gone out of blast, with the tap holes for iron and cinder in the exact state left by the workmen. The furnace walls and top were made of a special brick imported for this particular piece of work, and unlike anything found in the State, although there are thousands of imported brick in the early residences of the colonists. I shall

have the pleasure of submitting photographs of this furnace, when all the excavations are complete, and anticipate the collection of many other relics from the untouched portions of the surrounding earth.

Colonel Byrd, after leaving the Fredericksville furnace, crossed the country to Germanna, where he was entertained by Governor Spotswood, in a manner well worth remembering. I have only space to quote his writings which refer directly to this subject. Speaking of this interview with the Governor, he says:

"I let him understand that besides the pleasure of paying him a visit I had come to be instructed by so great a master in the mystery of making iron, wherein he had led the way, and was the Tubal Cain of Virginia. He corrected me a little there by assuring me he was not only the first in this country, but the first in North America who had erected a regular iron furnace. That they ran altogether upon bloomerys in New England and Pennsylvania, till his example had made them attempt greater works. But in this last colony they have so few ships to carry their iron to Great Britain, that they must be content to make it for their own use, and must be obliged to manufacture it when they have done. That he hoped he had done the country a very good service by setting so good an example.

"That the four furnaces now at work in Virginia circulated a great sum of money for provisions and all necessaries . . . that they are besides a considerable advantage to Great Britain, because it lessens the quantity of bar iron imported from Spain, Holland, Sweden, Denmark and Muscovy, which used to be no less than 20,000 tons yearly, though at the same time no sow-iron is imported thither from any country, but only from the Plantations. Then I inquired after his own mines, and I hoped as he was the first to engage in this great undertaking, that he had brought them to the most perfection. He told me he had iron in several parts of his great tracts of land, but that the mine he was at work upon was thirteen miles from Germanna. That his ore which was very rich, he raised a mile from his furnace, and was obliged to cart the iron when 'twas made fifteen miles to Massaponax, a plantation he had upon the Rappahanock River. . . . He had been building an air-furnace at Massaponax, which he had now brought to perfection, and should be thereby able to furnish the whole country with all sorts of cast-iron as cheap and as good as ever came from England. Colonel Spotswood said a furnace could be built for £700 if I went the nearest way to do it, especially as coming after so many I might correct their errors and avoid their miscarriages. That freight, customs and other charges in England amount to 27/ a tun. The whole expense here and in England may be computed modestly at £3 a tun, the balance, say £3 a tun, profit. We drove over a fine road to the mines, 13 measured miles from Germanna, each mile marked distinctly on the trees. All the land hereabouts seemed paved with iron ore, so that there seems enough to feed a furnace for ages. From hence we proceeded to the furnace, which is built of rough stone, having been the first of that kind erected in the country. Here the wheel that carried the bellows was no more than 20 feet in diameter; but was an overshot wheel that went with little water.

"This was necessary here because water was sometimes scarce, notwithstanding 'twas supplied by two streams, one of which is conveyed 1900 feet through wooden pipes, and the other 60. The name of the founder employed at present is one Godfrey, of the Kingdom of Ireland, whose wages are 2/6 a tun for all the iron he runs, and his provisions.

This man told me that the best wood for coaling is red oak"

Surely I have quoted and stated sufficient from manuscript and investigations to fully answer the query of Dr. Swank.

It is this last described furnace which is more explicitly described and illustrated elsewhere in this issue of *The Iron Age*, without any doubt the first furnace in America to manufacture pig iron by means of a forced blast, and as certainly built and managed by the principal owner, Governor Alexander Spotswood.

A sight of all these evidences of the first generation of miners and ironmasters of Virginia is sufficient reward for many journeys to and fro on this mineral belt—credible witnesses as they are of original and daring enterprise along new lines.

One hundred and fifty years have elapsed since this work was abandoned by the Palatines and those who immediately followed them, yet the ideas of the locating and constructing engineers can be understood from our to-day's observations, and the marvel is that from such premises their arguments were so successful in winning the necessary capital; that they acted so methodically in planning and operating in the face of great difficulties and constant dangers, accomplishing so much that was new and novel.

Not one iota of credit should be taken from the people who did this important work, nor a less meed of praise be accorded the man whose brain originated the idea, or who was sufficient within himself to carry out the programme agreed upon after concerted thought.

It may be that something of the praise is due to De Graffenreidt for suggestions, or possibly explorations, and it may be that some of the older ironmasters of Europe had a voice in the final settling of the question as to whether the crude "Catlan Forge" or the blast furnace should be employed for this experiment out in the wilderness of Virginia. We may surmise in all sorts of ways and means or circumstances which led to results, but the actual results which we now unearth for the first time, the fuels, fluxes, slags, bricks, cut stone, and the plantations sow iron, excite us to wonderment and admiration all the same.

I think that of all the honorable titles due to Governor Spotswood, the proud professional title should be given to him of "The First Mining Engineer of the Colony of Virginia."

I would like to see a monument erected to his memory, constructed entirely from the materials which compose the original furnace he built in 1714, and on it a slab, cast in the soft gray iron we now find in the ruins, an epitaph:

"THE TUBAL CAIN OF AMERICA."

San Francisco will soon have a second shipbuilding establishment as large and complete as the Union Iron Works, which have built the Charleston, San Francisco and Monterey for the new navy. The firm who propose to establish a new shipbuilding yard is the Fulton Iron Works. The site will be at Harbor View, where deep water is found near to the shore. James G. Fair is the financial backer of the new enterprise.

Duncan Mackenzie of Trenton, N. J., has been awarded the contract for about 250 tons of cast iron columns for the warehouse of the Constitution Wharf Company, Boston, Mass.

A Russian correspondent of an English exchange reports that the use of naphtha residues as fuel is growing in Russia. Naphtha conduits are being built to numerous factories in the neighborhood of Moscow, in order to thereby facilitate the use of the liquid.

The Line Shafting in Machinery Hall.

In the accompanying drawings is shown the somewhat novel method employed in hanging the line shafting in Machinery Hall at the World's Fair. The arrangement is admirable from a utilitarian point of view. Then, too, the heavy-wrought iron structure by which the bearings are supported should insure great stability and permanency of alignment. This is a point of exceptional importance where the power is to be used for exhibition purposes, in which any interference with its continuous operation must necessarily cause more annoyance and confusion than would be the case in a private manufacturing establishment. The principal object for which the structure was designed was to provide runways for the three 20-ton electric traveling cranes which traverse continuously the entire length of the main building and annex. The span, from center to center of girders, is about 80 feet, which, therefore, is the distance

the entire structure is independent of the building, and therefore cannot be affected by any settling or other movement which will almost inevitably occur, to a slight extent, perhaps, as regards its effect on the building, but quite sufficient to disturb the alignment of such an exceptionally great length of shafting.

As the traveling cranes will not require to carry any heavy loads after the installation of exhibits is completed, there will be absolutely no extraneous conditions affecting the stability of the girders, which will therefore have to support only the strains due to the power transmission.

The journal bearings for shafting are spaced at 8 feet centers, and consist of a pillow block at each column, and two intermediate hangers. The boxes of both are provided with ball bearings, and are adjustable in every direction. The hangers are of the double braced pattern, and are provided with an admirably simple and convenient device for entering the shaft, as readily as with a single-braced hanger. The arrangement is clearly shown in Fig. 3, and consists simply of an opening wide

vertical struts of the girder, and it is therefore at the stiffest part of the construction.

Order of the Court in the Ann Arbor Matter.

The order of the court in the Ann Arbor matter, involving the engineers and Chief P. M. Arthur, in substance is as follows:

It is ordered that a writ of injunction pending the hearing of the issues herein be issued out of and under the seal of this court, directed to the defendant, Peter Arthur, enjoining and restraining him from issuing, promulgating or continuing in force any rule or order of any kind under the rules and regulations of the association known as the Brotherhood of Locomotive Engineers, or otherwise, which shall require or command any employees of any of the defendant railroad companies herein to refuse to receive, handle or deliver any cars of freight to or from the Ann Arbor road, and also from in any way, directly or indirectly, endeavoring to persuade or

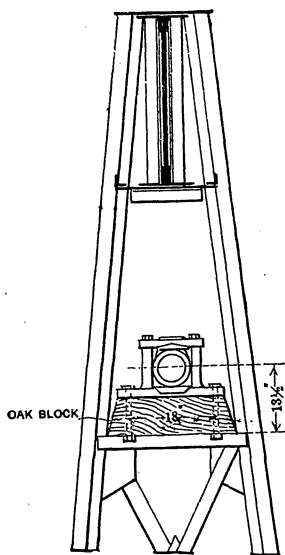


Fig. 2.—End Elevation.

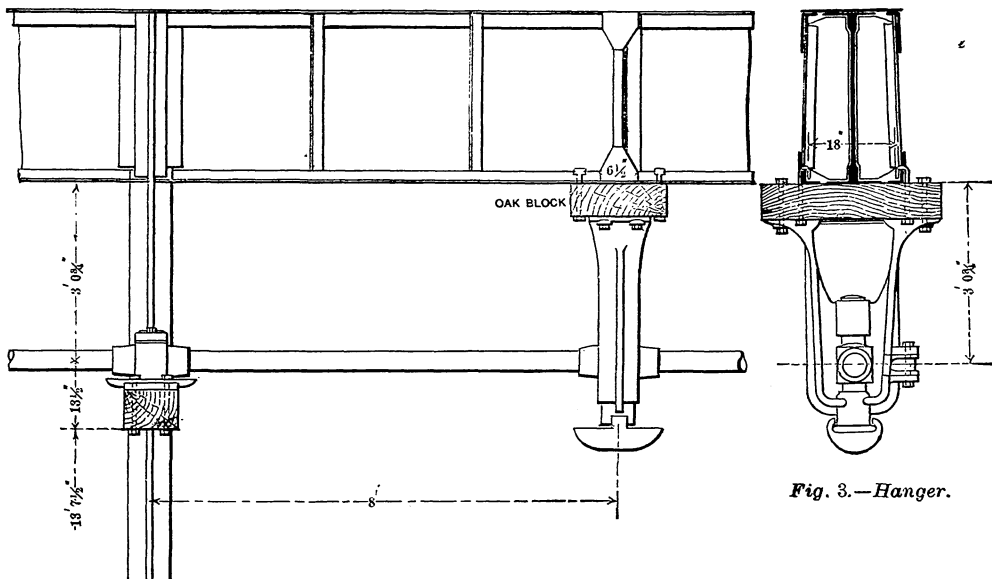


Fig. 1.—Side Elevation.

Fig. 3.—Hanger.

LINE SHAFTING IN MACHINERY HALL, WORLD'S FAIR.

between each pair of the six lines of shafting.

The general constructive features of the plate girders forming the ways are shown in the sectional views, Figs. 2 and 3, as is also the method of attaching the hangers and pillow blocks. The dimensions of girders are 36 inches deep by 19 inches at top and 21 at bottom. The central web is of $\frac{3}{4}$ -inch plate, with heavy plate transverse struts spaced 8 feet apart, and two intermediate $3 \times 3 \times \frac{3}{4}$ -inch angles 32 inches apart. The supporting columns are carried by timber foundations, composed of piling thoroughly braced and tied at the top by means of heavy oak diagonal braces, and surmounted by three 10×10 -inch transverse oak timbers, upon which the sills of same size and material are laid. The whole is rigidly held together by 1-inch through bolts, and for such temporary service constitutes a foundation well adapted to the purpose. The uprights of columns are composed of 3×8 -inch Z bars, and the diagonal and transverse bracing of riveted double angles, forming a T section. The curved braces are of $\frac{1}{4}$ -inch plate iron. A spread of 6 feet at bottom is given to resist side strains; and to each of the columns of the main roof trusses of building a transverse bracing is attached, which consists of a 36 inch wrought-iron lattice girder. With the exception of the latter

enough to readily admit the shaft, and a snugly fitted block, which is held in place by means of a through bolt and nut passing through heavy lugs at top and bottom of gap. The length of all bearings is four diameters of shaft. The pillow blocks are mounted on an 8×8 -inch oak block, carried by the upper transverse brace of column, to which it is secured by bolts and nuts passing through the angles, block, and base of pillow block. The oak blocking, to which the hangers are attached, is 8×20 inches, is secured to lower member of girder by means of four hook bolts passing over vertical leg of the longitudinal angle, and through the block, outside of width of hanger foot. The distance between bolt centers is 22 inches, and as the length of blocking (and hanger foot) is 36 inches, ample stiffness is afforded to resist the twisting strain due to a leverage of 36 inches, which is the distance of center of shaft from bottom of girder. The hanger is attached to block by four through bolts and nuts. The distance from floor to center of shaft is 14 feet 9 inches—a very convenient height for all purposes—and the effective drop from girder is sufficient to swing a 72 inch pulley, provided an allowance of $\frac{1}{4}$ inch for belting is not exceeded. It should have been mentioned that the location of each hanger coincides with that of the heavy

induce an employee of the railroad companies whose lines connect with the Ann Arbor not to extend the said company the same facilities for interchange of interstate traffic as are extended by said companies to other railway companies.

Chief Arthur's attorneys having given notice of appeal the court fixed the bond in the sum of \$500.

According to official statistics just issued, the mineral exports of Newfoundland during 1891 were as follows: Copper ore, 7060 tons, value \$63,540; regulus, 3626 tons, and ingots, 1139 tons, value of both \$502,510; iron pyrites, 19,150 tons, value \$57,900; antimony, \$1000. The total value of ores exported in 1891 was \$624,750. From 1854 to 1891 the total value of copper ore exported in that period was \$9,504,717.

The annual report of the Commissioner of Mineral Statistics for the State of Michigan gives the following figures as the total yields of the mines of that State for the year 1891:

Copper.....	114,390,596 pounds.
Iron.....	5,706,678 tons.
Gold.....	\$377,598.30.
Silver.....	\$ 42,251.36.
Coal.....	30,658 tons.
Salt.....	3,966,784 barrels.

Best, Fox & Co.

About nine years since the business of Best, Fox & Co., brass founders, fitters and machinists, was established in a comparatively small way at the corner of First avenue and Ferry street, in Pittsburgh. The business grew rapidly and in a few years it was found absolutely necessary to acquire more room, and with this object in view the brass and bronze departments were removed to Twenty-fifth street in that city about four years since. Within a short time the balance of their plant, consisting of offices, fitting and machine shops were also removed. The property has a frontage of 460 feet on Twenty fifth street and 72 feet on Railroad street and 72 feet on the Allegheny river. The new building is a four-story brick, 72 x 20 feet. On the first floor of this building is the main office, 26 x 30 feet in size, while on the second floor the drafting rooms are located, being an exact duplicate in size and finish of the offices on the lower floor. Roomy vaults are provided on each floor and also in the basement. The remaining half of the lower floor is taken up with heavy lathes, planers, boring mills and drilling tools. Three of the iron posts that support the building are used as masts for cranes, by means of which heavy castings for valves and fittings from 12 to 48 inches in diameter are handled to and from all tools. The remainder of the first floor is taken up by the pipe-fitting department. In addition to the tools for cutting and threading pipe from the smallest to the largest sizes, there is a large furnace for heating, together with table and power appliances in proportion for bending pipe as large as 24 inches in diameter. Two traveling cranes of 12,000 pounds capacity each are brought to service for handling this heavy pipe. A 125 horse power Cummer engine furnishes the motive power required in the new building.

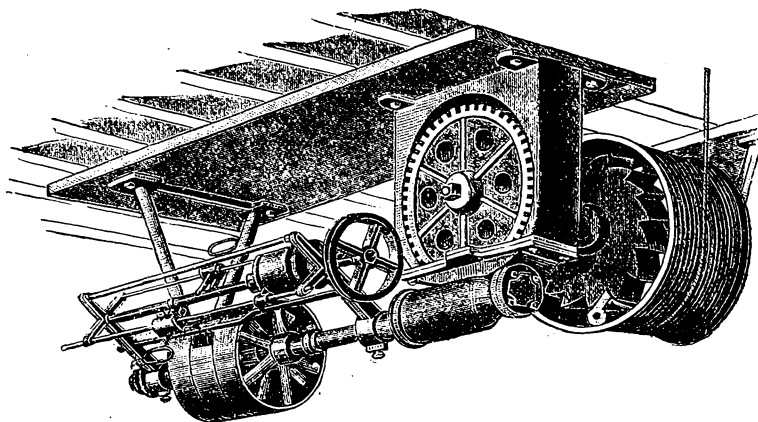
On the second floor are located the lighter tools for working iron and steel, while the third floor is devoted exclusively to brass-turning tools, and the fourth floor is used for storing patterns for this branch of the business. Aside from the substantial character of the building and its admirable appointments for the work to be done, it is equipped with a light shaft, 12 x 32 feet, near the center of the building, and 120 windows on side, front and rear, which insures plenty of light for all purposes.

The foundries are equipped with 14 crucible and one Siemens furnace for melting metals, Babbitt furnaces and large core ovens. Two large and three small cranes handle the heavy class of brass and bronze work turned out. The former capacity of the concern was 800 tons per annum, but with the additions and improvements at the new plant the capacity will be increased to 1300 tons per annum. At the extreme southwest end of the property, next to the Pittsburgh Junction Railroad, is a building 30 x 70 feet in size in which are located two boilers that furnish all the power required for the plant. In this building is a 50 horse power engine for operating crusher, grinding pans and cleaning barrels for extracting the brass contained in ashes, sand and sweepings, thereby practically preventing loss. Included in the equipment is a pump for forcing oil to various fires, also hydraulic pump and accumulator giving 5000 pounds maximum pressure for operating hydraulic machines, testing valves, fittings, &c. A short distance from this building is located underground a 17,000-gallon tank containing crude oil, which fuel is used almost exclusively. Automatic sprinklers will be placed in all buildings. The concern has good shipping facilities, having a siding from the Allegheny Valley Railroad and through it with the entire system of the Pennsylv-

ania Railroad, and a switch from the Pittsburgh Junction Railroad in the rear and through it with the entire system of the Baltimore & Ohio Railroad.

The Johnson Elevator Winding Gear.

An improved freight elevator winding gear for safely carrying a load of 3000 pounds is here illustrated. The housing is so arranged that it can be changed from a right to a left hand machine, as may be required. The worm is chaced from a solid wrought-iron forging and is finished 5½ inches in diameter, 1½ pitch and is part of the driving shaft. The shifting device is very simple and effective; it can be swung to any point, to accommodate the line of belts; it moves but one belt at a time and when both belts are on the loose pulleys the brake is firmly set on the tight pulley, thereby securely holding the platform in any desired position. The worm wheel is 24 inches in diameter and has 50 teeth, which are cast concave to give them large bearing surface, and is held in place on the drum shaft by a large spline and nut. The pulleys are 20 inches in diameter by 4 inches face. The drum is loose on the shaft and is driven by



THE JOHNSON ELEVATOR WINDING GEAR.

a ratchet wheel and two pawls, and in case the carriage is accidentally stopped or fouled in descending the drum immediately stops revolving, which prevents the rope from unwinding or dropping off the drum. This is a very important feature, as many accidents are caused by the rope becoming loose and dropping off the drum. This gear is made by L. J. Miller & Co. of Cincinnati, Ohio.

Queensland, Australia, has taken a novel step in establishing courts of conciliation in the Colony. These courts are not for labor disputes only, but are open for adjudicating on disputes of all kinds arising in social or business life. The proceedings are to be conducted in private, and as a tentative measure justices have been appointed in Brisbane, the capital of Queensland, to inaugurate the new alternative for expensive law proceedings. The form of procedure is simple and the costs small. The award of the justice is not binding on either party to a suit until they have both signed an agreement accepting it. Then compulsion comes, and, being registered with the consent of the parties, the agreement becomes a binding rule of the court.

Carrere & Haas, architectural iron builders, of Brooklyn, N. Y., have failed. J. Maxwell Carrere has been appointed receiver.

English advices to hand state that a syndicate has obtained possession of more than 12,000 tons of good merchantable

copper, which is a relic of the French syndicate, and 5000 tons in addition remain in France to go into consumption there. This represents all, or nearly all, of Baron Hirsch's holdings at present, it is believed. It is reported that this copper is shortly to go into consumption.

Inter-Continental Railway Communication.

The Inter-continental Railway Commission, which has been entrusted with the task of preparing plans for the establishment of a system of railroads to afford better means of intercommunication between the republics of the Western Hemispheres, have just issued their initial report, showing the progress of the surveys under the direction of the executive committee appointed in April, 1891, for this purpose. This preliminary report is merely intended to inform the governments interested in the enterprise how much has been accomplished up to date. The ultimate details of the scheme must await the completion of the field surveys and the preparation of the final maps. Much progress appears, however, to have been made by the three separate surveying parties—one in Central America, and two in South America—

which have been actively at work for nearly two years. The projected routes in Guatemala and Salvador have been successfully mapped out by the Central American corps and a line of survey run across the continent from Cartagena in Colombia to Quito in Ecuador. The Southern corps have continued the survey southward from Quito to Cuzco in Peru. There yet remains the rest of the isthmus line to survey, namely, the country from Salvador through a portion of Southern Honduras and Nicaragua, Costa Rica, and Colombia to Antioquia, where it will strike the portion already surveyed in that Republic by the South American corps. Spurs to Venezuela and Bogota, and the extension of the line to La Paz in Bolivia, where it will connect with the local system, as well as the trans-continental branch to Rio Janiero, Brazil, and the branch southward to Jujuy in the Argentine Republic, both of which will start from Huanchaca in Bolivia, comprehend the work yet to be done in South America before the whole railway system contemplated by the Commission can be planned. The several surveying corps appear to have met with great assistance from the various governments through whose territories they have passed, and the work accomplished by them appears to be satisfactory in every way. The carrying out of this great enterprise will do much to open up the resources of the countries through which the lines will pass, and should tend in every way to their advantage, besides offering splendid commercial facilities to the manufacturers and traders of the United States.

WORLD'S FAIR NOTES.

Perfection of Transportation Facilities.

Work has been hastened on the various lines by which the fair grounds will be reached from the heart of the city of Chicago. Those who have suffered from the annoyances of inadequate transportation on similar occasions will be interested in some of the details.

The Illinois Central Railroad, is of course, far in the lead of any other means of passenger conveyance. Additional tracks have been laid on this road, and for a considerable distance the entire road-bed has been elevated so that the World's Fair service can be performed without interference with the railroad company's immense general business and also at a high rate of speed because there are no crossings. The outlay by this company in merely making preparations for World's Fair local traffic has run up into millions.

The South Side elevated railroad has just completed its extension into the grounds, and is arranging to carry passengers from the business center of the city by rapid trains and to land them in the midst of the great fair buildings. On Dedication Day last fall, this road, then in operation from Congress street to Washington Park (Fifty-fifth street), carried within a period of 12 hours 115,000 people. Its equipment then was 85 cars and 19 locomotives; it has now 180 cars and 46 locomotives. The station of this railroad within the grounds will be an elaborate structure, with a capacity of accommodating perhaps 35,000 persons an hour. Outside the gates at Sixty-third street will be the Stony Island avenue station, with a capacity for accommodating 10,000 more.

"We have arranged our traffic programme," said President Barnard, "so that we will run through trains from Congress street, Twelfth street and from Thirty-ninth street, south bound; and from Jackson Park station and Stony Island avenue station, north bound. They will run perhaps one minute apart. The road is in thorough order; it is being equipped with the union switch interlocking system at all points where the tracks cross each other. We are now putting in electric light plants not only for all stations, platforms and yards, but also for all switch and target lights for our entire system; finding this much cheaper as well as more efficient than gas. Under these conditions the road has a carrying capacity—running trains one minute apart, which is well within the limits of safety—of 40,000 people an hour each way."

In the south division of the city, where Jackson Park and the World's Fair are situated, great demands will be made on the resources of the cable and horse-car systems to take care of the unusually large proportion of passenger traffic which will fall to them during the six months of the exposition. The Chicago City Railway Company (the name under which the South Side cable and horse car systems are managed) are making preparations for the extra demands on their service. The two systems comprise not less than 152 miles of track which gridiron that part of the city pretty thoroughly. Twenty-nine different lines are operated on as many different streets, and the company have at their demand nearly 2000 cars, including those for their new electric lines.

The two big cable lines of the company, namely, the Wabash avenue and the State street lines, will be the great feeders of the fair grounds, while the radiating lines will be like veins contributing to these main arteries. Last October, at the time of the dedication, only the Wabash avenue line was available for feeding the fair

grounds. The State street line is to be made also available by May 1 by connecting it with an electric cross-town line at Sixty-first street. Speaking of the enlargement and extensions which the company are making in preparation for May 1, Supt. M. K. Bowen said:

"We will have in operation a high-speed electric line from State street to midway Plaisance by May 1. Each motor car will have two trailers, and the capacity of the line will be sufficient to take care of all passengers transferred from the State street cable. The round trip from State street to Midway Plaisance, a distance of a mile and three-quarters, will be made in about 20 minutes. For the special accommodation of Englewood traffic another electric line will be opened at the same time on Sixty-third street, running to the fair grounds, making a loop at the Sixty-fourth street gate. This will be a high speed line also, but the motor cars will have no trailers. Both lines described are built under the Westinghouse trolley system. Extensions have been made to our Thirty-fifth and Forty-seventh street cross town lines, and they will be operated as electric lines after May 1. Last October, on Dedication Day, we moved about 750,000 people, using only closed or winter cars, each of which seats only 26 persons. Now, our open or summer cars will each seat 50 persons, and the World's Fair months, from May to October, will allow us to use both summer and winter cars. In my opinion we will be able to handle three or four times as many people per day as we did on the big day of the dedication season last October."

In addition to these facilities the Northern Pacific Railroad will run trains from the West side of the city direct to the grounds, and numerous boats will carry passengers by lake.

Missouri's Exhibits.

Missouri, the fifth State in wealth and population in the union, bids fair to become one of the first in the number and excellence of her exhibits at the Exposition. The exhibits of this State will embrace the departments of agriculture, horticulture, minerals, forestry, live stock, manufactures, liberal arts, fish and fisheries, ethnology and archaeology, wool and dairy.

J. K. Gwynn, the executive commissioner of the Missouri State Board, says the *Chicago Record*, has been untiring in his efforts to promote the success of the State's showing.

"The Missouri State Building," he said, "is of the Spanish renaissance style of architecture and will not be used for exhibition purposes. In the finishing of the building a large variety of native structural materials, such as hardwoods, limestone, sandstone, marble and onyx, have been used. The building promises to be an exceedingly popular headquarters, aside from its entertainment of Missourians. The Commercial Travelers' Association has been assigned quarters in this building. The reason of this is that the president of this order happens to be a Missourian, hence the propriety of assigning the national organization of commercial travelers a home in the Missouri Building. The quarters of this organization will be handsomely furnished, and elaborate preparations are being made for the entertainment of the members of the fraternity who shall attend the fair."

"The executive commissioner of the State of Missouri is the secretary and treasurer of the national executive officers, so the Missouri Building becomes the headquarters of this organization, the object of which is to promote in any way the best results of the States and Territories whose executive officers are members of the association, and also to cultivate fraternal relations with the representatives of foreign

governments making exhibits at the fair. Thus it will be seen that it would be difficult to devise ways and means to more fully popularize a state building than have, by accident, as it were, fallen to the lot of the Missouri Building.

"Missouri is, perhaps, more celebrated for her mineral wealth than any other one product of the State. Iron Mountain is known the world over. However, while more famed for this celebrated mountain than for any other one feature, iron is by no means the most important mineral product. Missouri now produces two-thirds of the zinc produced in the United States, and her zinc industry is yet in its infancy. She also ranks second in the production of lead, being surpassed by Colorado only. The lead mines located in San Francisco County produce more lead than any other plant in the world, with one exception. This plant will be represented in the exhibit by a handsome model in brass and cherry, costing about \$3000. Numerous magnificent specimens of disseminated ore from this mine will also be exhibited. The zinc region lies principally in southwest Missouri and the zinc industry has had greater development in Jasper County than elsewhere. Enormous quantities of lead have also been produced in this county, and a specimen of pure galena weighing 6500 pounds will be shown. Specimens of zinc ore, or 'jack' as it is commonly called, weighing 2500 pounds will also be an attractive feature."

"Numerous other large specimens of great interest to the mineralogist will be among the collection. No better criterion of the relative importance of the mineral industries of Missouri could be given than the favor shown the State in the allotment of space. Two main aisles, one running east and west and one north and south through the Mining Building, intersect at the center, making the four corners at this intersection especially desirable. To Missouri was allotted one of these choice corners, and the installation of her mineral exhibits is now well under way. The facade of this exhibit along the aisle lines is composed of granite, Roman brick and terra-cotta products of the State. These in turn are surmounted by a cornice painted to conform in color with the terra-cotta composing the pilasters and coping. The general effect is most impressive and has already elicited favorable comment from all who have seen it. Numerous ornamental figures relieve what was otherwise monotonous and severe in the pilasters composing the colonnade of this exhibit."

The cases in which the specimens will be exhibited are all of quarter-sawn oak of handsome design, with polished finish. In addition to the lead and zinc an immense number of minerals, stones, clays, shales, slates and coals will be exhibited. An interesting feature of this exhibit will be a large topographical map of the State giving the distribution of the more important minerals, also the elevation above the sea level and the general lay of the country. There will be two small models made with especial view to exhibiting two prevailing types of topography, one of the hilly portion of the State and the other of a rich prairie locality in the State underlaid by coal. The commission has endeavored, by means of specimens, models and maps, to give to the visitor a complete epitome of the mineral resources of the State. Other models showing the mode of the occurrence of the ore in the different geological formations of the State have also been provided, so that nothing has been left undone to facilitate investigation into the mineral resources of Missouri."

The entire administrative work involved in making this collection of exhibits has been done by Mr. Gwynn. In selecting men to do the work he regarded the special training and fitness of the in-

dividual, backed up by a natural love of a particular pursuit. The work progressed smoothly and successfully, as the showing of the State demonstrates. In the department of minerals Dr. E. O. Hovey was made superintendent, and under his general direction the mineral collection has been made. James A. Reeves of Joplin, a practical miner of large experience, was placed in charge of the lead and zinc collections. Professor Arthur Winslow, State Geologist, was given the general supervision of the collection, so far as its scope and intent are concerned, and he and his excellent corps of assistants rendered not only valuable but earnest and enthusiastic aid in securing specimens of every valuable mineral product in the State.

British Catalogue Ready.

Sir Henry Wood, representative of the British Royal Commission, has presented to Chief Walker Fearn of the foreign affairs department a copy of the official catalogue of the British section at the World's Fair.

The volume is reported to be very complete, and comprises 544 pages of actual catalogue matter, divided under department heads with appendices, and the whole work supplemented with a complete alphabetical index. The departments of the exposition are treated in the order followed in the official classification and each department is introduced by a preface upon the scope and character of its exhibits written by some eminent man, a specialist in that direction. For instance, that of agriculture is written by Ernest Clarke, a well-known authority; horticulture by W. Thistleton Dyer, C.N.G., F.R.S., director of the royal gardens, Kew; mines and mining by C. Le Neve Foster, D.S.C., F.R.S, inspector of mines and professor of mining in the Royal College of Science; transportation exhibits by Sir Douglass Galton, K.C.B., D.C.L., F.R.S.; the preface of fine arts, painting, architecture and decoration is written by J. E. Hodgson, R.A., professor of painting to the Royal Academy of Arts. The introductions to other departments are written by men equally eminent in their special directions. The list of members of the royal commission in the book is headed by H. R. H. the Prince of Wales, K. G., as president of the Society of Arts. A general plan of the grounds and buildings is included in the book.

Sending Exhibits Unmarked.

Master of Transportation Holcomb is getting in deep water at Jackson Park. He has a small railroad there on which he is endeavoring to handle expeditiously the cars of exhibits which are daily arriving. Mr. Holcomb's railroad is not large enough for the occasion, and a blockade is seriously threatened. It will come about not so much on account of the facilities at Jackson Park as because of the heedlessness of American exhibitors, who have exercised no care in billing their goods. Specific instructions were sent out months ago with blanks stating that each exhibitor should indicate on the blank just where the exhibits were to be installed, and then nail the card on the side of the car. If these instructions had been followed there would have been no difficulty in hauling the car to the proper building when it reached the park. As it is there is no indication on hundreds of cars as to their destination in the grounds. It requires hours at a time to go to the records and discover merely by the number of the car where it belongs. The result is that they are mixed up in the yards, and any degree of facility in handling them is out of the question.

Foreign exhibitors obeyed instructions and have greatly aided the work of installation. There has been no difficulty

in placing their shipments. Mr. Holcomb is beginning to feel the seriousness of the situation, especially when he goes down into the freight yards in the southwest corner of the grounds and discovers almost every track covered with long trains. But little switching can be done during the day. All this work has to be performed at night, and the cars left standing throughout the day to be unloaded at the several buildings. Every day the number of cars received increases, and a few more pile up in the yard.

At the Centennial there were about 5000 carloads of exhibits. It has been estimated there will be at least 10,000 at Chicago. Of this expected number but little over 2000 have been received. If the remaining 8000 should come in regularly there would be an average of over 300 cars each day for the remaining time before the opening May 1. Thus far the highest number received has been about 200, and if difficulty is experienced now it is easy to predict what will happen toward the end of the month.

The Bethlehem Iron Company's Exhibit.

Lieut. W. H. Jaques is now in Chicago supervising the installation of the exhibit of the Bethlehem Iron Company of South Bethlehem, Pa., which comprises the following articles:

	Dimensions.											Approximate weights.	
	Length.		Breadth.		Height.		Thickness.	Diameter.				Pounds.	Tons.
								Outside.		Inside.			
Ft.	In.	Ft.	In.	Ft.	In.	In.	Ft.	In.	Ft.	In.			
Armor:													
First experimental plate. 1891 (plain steel)	6	...	4	6	...	...	11½	...	...	...	...	12,782	5.7
Barbette plate, battleship "Indiana" (nickel steel)	12	1	8	4	...	...	17	...	...	...	...	69,798	81.2
Experimental plate (nickel steel, case hardened)	8	...	6	...	...	...	10½	...	...	...	...	20,754	9.3
Ventilator for "Puritan" (nickel steel) .....	...	...	...	...	4	1	6	7	...	6	...	20,388	9.1
Guns and Gun Forgings:													
12-inch B. L. rifle, navy, Assembled Naval Gun Factory	36	9	...	...	...	...	...	3	9	1	...	101,248	45.2
Trunnion hoop, 12-inch B. L. rifle, army, smooth forged .....	...	...	1	9¾	5	6½	...	4	¾	3	3¼	5,100	2.3
Jacket, 13-inch B. L. rifle, navy, smooth forged	17	½	...	...	...	...	...	3	2¼	1	11¼	56,800	25.4
Tube, 13-inch B. L. rifle, navy, smooth forged	38	5	...	...	...	...	...	2	1¼	1	...	59,000	26.3
Gun hoops, smooth forged	Various lengths and diameters.											102,747	45.9
Hammer:													
Full size model of 125-ton† steam hammer .....	...	38	...	90	...	...	...	...	...	...	...	28868	...
Ingots:													
Fluid compressed, 54-inch round	15	...	...	...	...	...	...	4	6	...	...	108,190	48.3
Armor plate, rectangular (wooden model) .....	...	8	6	18	...	52	...	...	...	...	...	251,686	112.5
	Length.		Diameter.										
	Over all.	Webb.	Shaft		Pin.		Hole. In.	Throw one-half stroke.					
Shafting:													
Double-throw crank, built up, Pacific Mail Steamship Company, "City of Sidney," finished	20	6	7	10	1	5	1	4	6	2	6	52,550	23.5
Single-throw crank, United States cruiser "Minneapolis," finished	9	7½	3	2½	1	4½	1	5½	7½	1	9	8,850	4.0
Spare shaft, Old Colony Steamboat Company, finished	39	5	...	...	2	3	...	...	9	...	...	65,900	39.4
Hollow-forged shaft, black, as coming from the forge.	66	11	...	...	1	8	...	...	8¼	...	...	55,200	24.6
Torpedo:													
Air flask for Whitehead	4	11	...	...	1	5¾	...	...	15¾	...	...	1,140	0.5
Miscellaneous:													
Air cushion cylinders.													
Cases containing open-hearth and Bessemer steel billets of various percentages of carbon, showing fractures, tests, &c.													
Case containing pieces of rails of various sections, showing fractures.													
Pieces of rails subjected to drop tests.													
Pieces of rails showing splices subjected to drop tests.													

* Weight to nearest tenth. † Piston rod, piston and tup (falling parts), 125 tons.
‡ Largest in the world. § Hammer and foundation.

Specimen German Parlor Car.

One of the interesting foreign exhibits in Transportation Hall is a parlor car such as German railroads use, built by Van Der

Zypen & Charlier of Cologne. This car was shipped in pieces filling 20 large boxes, each piece finished so that the whole can be put together without a hammer. The body of the car is 30 feet long, 10 feet wide, and is built mostly of steel. The lower half of each side is a solid sheet of steel 30 feet long, 3 feet broad, and ½ inch thick. On the side plates rest the window frames made of wood, covered with sheet iron. The cross bars of the running gear are made of pressed steel. The interior of the car is finished in solid brass of fanciful design, buff silk and blue velvet. The top, made of sheet steel, is oval in shape and tastefully decorated. The platform at either end is surrounded by beautifully wrought railings of iron. The interior arrangement is similar to that of the day coaches found on American railroads. The seats are arranged along either side with an aisle in the center. After it has served its mission at the exposition this car will be taken back to Germany and put in service on a branch of the Prussian State railway between Wiesbaden and Langenschwalbach.

Relic of Early Railroad Days.

Another interesting relic of early railroading in this country has just been forwarded to the Transportation Department of the exposition by the Illinois Central Company. It is a locomotive of English

build brought to the United States in 1836. For several years it was operated on the Natchez & Hamburg road, now part of the Illinois Central system. In 1868 it was taken to Vicksburg, but

shortly after ran into a river, where it was buried until 1870, when the superintendent of the road had it dug out and put in service again. Although largely out of date and at least a full generation behind the times, it was kept in use on a small branch road down in Mississippi up to three years ago. The engine is a curious looking machine and will be an interesting attraction. When first put in service it ran on strips of iron bolted to wooden rails laid lengthwise. A section of the old track 30 feet long will also be shown.

Foreign Exhibits.

Up to the 5th inst. 42,578 packages containing foreign exhibits for the World's Fair passed through the New York Custom House. The customs officers are now looking after between 1400 and 1500 packages which were shipped from Bremen. They belong to the Italian Government, the bulk of whose exhibits have been sent on a national vessel to Portland, Maine. The packages in New York will be shipped to Portland in charge of a special officer, and will be taken to Chicago with the main lot. Two hundred British soldiers, representing every branch of the English military service, and the crack representatives of some of the most famous regiments of the British army, arrived from London on the 5th by the steamer "Massachusetts."

The Great Ferris Wheel.

The axle for the Ferris big wheel on the Midway Plaisance was put in place on the 6th inst. It was hoisted 150 feet from the ground, where it now rests on the supporting columns. The casting weighs 56 tons. When the arms are built out around it and the cars attached to their ends the turning of the wheel will lift passengers to a height of 270 feet.

THE WEEK.

The Shipping Federation or association of shipowners in England and the union dock laborers were in violent conflict at Hull last week, completely arresting the movement of steamships to the United States or elsewhere, and London, Liverpool and Glasgow are liable to become involved unless the difficulty can be arranged.

A revolt in Santo Domingo, ostensibly in resistance to concessions made by the Government to citizens of the United States, may lead to a protracted struggle.

Vessel owners on the lakes declaim against the practice of towing enormous timber rafts to Saginaw Bay, Sheboygan and other points, and Governor Poe has commenced an investigation.

The Mexican Government will put in force April 15 a new law to govern railroad traffic in that country which excites much discussion among merchants and shippers. The "proyecto," as it is called, though framed in its general features in accordance with the Interstate law of the United States, stipulates that railroads throughout the republic must lower their rates or forfeit the concessions made to them by the Government. The new law also prevents the payment of rebates, and generally wages war on any form of discrimination, prohibiting at the same time ticket-scalping practices, operation of traffic contracts or revenue pools, and gives the Government the right to say what rates shall govern, fixing very severe fines and penalties, including imprisonment, for violation by companies' officials or agents, who shall always be considered for legal effect as employees of the company.

The Southern States are through holding immigration conventions and cotton exchange conventions and now await results. Cotton planting appears to be go-

ing on as actively as ever, while in regard to labor the tendency to centralize in cities at the expense of the agricultural districts is something difficult to control. There would be more profit in developing manufacturing resources.

New Orleans, in co-operation with Western men, is having remarkable success in capturing the grain trade, so that exports from that city now in a single month are greater than they were in an entire year not long ago, and this notwithstanding the grain exports of the country as a whole declined heavily.

The attempt to amend the penal code of this State by so changing the conspiracy laws as to legalize the boycott was defeated in the Assembly.

The Mexican Congress was startled by the announcement that \$42,500,000 would be needed for Government expenses the coming year.

Professor Ruge, a German geographer, has been searching into the financial accounts of Columbus' voyage, and makes it out that the cost of the world-discovering expedition was 1,140,000 maravedis, or, in modern American money, about \$7500. The admiral himself was paid at the rate of \$320 a year; the captains got \$192 each, the pilots from \$132.50 to \$153.50, the surgeons \$38.20, and the sailors \$30.60. Men were cheap in those days, of course, and the small sums mentioned possessed a purchasing power many times that which they do in 1893. Nevertheless, in its financial aspects, as in its social, religious and political effects, the voyage of Columbus stands as the greatest venture in the world's history. No \$7500 investment ever brought such returns.

Respecting future tariff changes a Washington correspondent remarks that an extra session of Congress convened next September would not be able to do more than formulate the details of a tariff bill before the extra session must adjourn in order to permit Congress to meet again in regular session on the first Monday of December. On the other hand, if the extra session should begin in May or June a tariff bill might be passed by the House in four months.

The Nebraska Legislature passed a maximum freight-rate bill which makes an average reduction of about 30 per cent.; but railroad managers feel that they are protected by decisions of the United States Court which forbid the establishment of unremunerative rates. The Governor of Kansas is agitating the same proposition.

Farm implements in Japan are very rude. An American gardener who has just completed a tour in that country says that the hog-hoe is the chief tool used. The blade is 4 inches wide. The plow is so small that it looks like a toy. In threshing rice young women and children draw the straw across the teeth of a saw-like blade by which the seeds are dislodged.

A struggle between the two express companies, the United States and American, to control the New England business, results in a temporary injunction by Judge Barrett restraining the New York and New England Railroad and the United States Express Company from interfering with the privileges of the five-year contract of the American Express Company of December 5, 1892.

The Compagnie Transatlantique strongly advocates the lighting of the Atlantic route from Ireland to Newfoundland. It is proposed to put ten powerful floating lights 200 miles apart, and connect them by electric cables.

A painting ordered by the New York Chamber of Commerce will be of an historical character, commemorative of Mr.

Field's work in the establishment of the Atlantic cable. The picture will be 6 x 9 feet in size, and will contain the portraits of Mr. Field, Peter Cooper, Wilson G. Hunt, Moses Taylor and Marshall O. Roberts.

The extraordinary increase of imports into this country of late is mainly due to the large demands for consumption of such articles as sugar, coffee, rubber and raw silk, stimulated by the advance in prices and the greater activity of manufacturers, rather than by successful foreign competition, of which latter there is little evidence.

California promises an immense grain crop this year. With prices in England lower than ever before the harvest will be golden only in a figurative sense.

The Chinese six companies of San Francisco have raised \$60,000 from their countrymen by collecting \$1 per head, to fight the Geary registration law which goes into effect May 1.

Americans are not going to Europe in large numbers this season, judging from the number of empty berths on outgoing steamships. The explanation is supposed to be the rival attractions of the Chicago fair and fear of cholera in Europe and possible difficulty in returning home.

A new law reduces the number of Brooklyn Bridge trustees from twenty to eight, each of whom receives \$3,000 per annum.

Judge Barrett denied the motion to continue the injunction obtained by the clothing manufacturers to restrain the United Garment Makers from sending out boycotting circulars. It was his impression that the circulars sent out could not be construed into intimidating or threatening documents.

The rubber men who have organized the Beni Gum Company, are about leaving New York to explore land in Southern Bolivia, in the expectation of forming a powerful competitor to the rubber trust.

The coffee trade with Venezuela, Colombia and Hayti is vanishing under the effects of retaliatory duties, and exports from the United States are likewise falling off.

The Chicago meat packers talk about erecting several huge tanneries. Three slaughtering establishments there produce about 4,000,000 raw hides annually. They propose to tan their own hides.

The graduating class of the New York Trade Schools numbers 152, about two-thirds of whom were from the class of plumbing.

The Nova Scotia coal mines produced last year 1,752,000 tons, of which only 14,000 tons were taken by the United States.

The plant of the East Lebanon Iron Company at East Lebanon, Pa., has been burned. The works were only recently erected, and their equipment of machinery was of the most approved. The loss is variously estimated between \$45,000 and \$75,000, and is fully covered by insurance.

An appraisalment has been completed of the plants in Waterbury as a preliminary to the long-talked-of consolidation of brass and copper interests in the Waugatuck Valley.

Negotiations are still going on under the leadership of John A. Logan, Jr., of New York, for the consolidation of the Youngstown iron interests. It is reported that it looks as though the arrangement will be consummated.

The Iron Age

New York, Thursday, April 13, 1893.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - - EDITOR.
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

The First and the Latest Blast Furnace.

In his important contribution to the early history of iron manufacture in the United States W. H. Adams of Mineral City, Va., modestly fails to allude to the patient study and keen search which has made him the discoverer of the remains of the first blast furnace worked with forced blast in the United States. From an investigation of what documentary evidence had come to our time, Mr. Adams drew his own deductions concerning the probable site of the old plant. Local tradition and the consensus of opinion of old residents, including a descendant of Governor Spotswood, pointed to one ruin, until it seemed impossible to escape the conclusion that it represented the old plant, in spite of striking discrepancies between its condition and surroundings and the descriptions of early writers. Only one old woman furnished evidence to the contrary by declaring that she remembered when the furnace was built whose origin others assigned to a much earlier date. Her son, a woodsman, declared that he knew of a place answering the description, and that he had discovered there a hole leading to some masonry.

An investigation of the surroundings gave the greatest encouragement, and accordingly excavations were begun last year, the progress of which is depicted in the series of photographs which we reproduce in our supplement.

In curious contrast to this early enterprise, and illustrating well the progress made in nearly two centuries, we present elsewhere a description of the plant of the Buffalo Furnace Company, the latest triumph of American skill, which makes annually more than 100 times the amount of iron. Our engravings indicate the development from a furnace whose measurements come within the range of a 10-foot pole, to the modern 80-foot stack, with its elaborate equipment of stoves and engines.

Considering the great significance of Mr. Adams' discovery, the proposal to acquire the old furnace ruin and its site seems one which would meet with widespread approval. It would rescue it from further decay, and transmit to future generations intact the only relic of a time when, indeed, the American iron manufacture was an infant industry.

Conferences are going on in this city of the Western cast-iron pipe works, to carry into effect the proposed consolidation spoken of some time since. At former meetings complete agreement had not been reached, and it is reported that now again one of the leading concerns is showing a disposition to hold back.

A Western Foundrymen's Association.

We have been requested by prominent Western foundrymen to assist in the development of a sentiment favorable to the establishment of a foundrymen's association at Chicago. The request is one with which we do not find it difficult to comply. There is no reason why a good strong organization of foundrymen should not be established in the West. The manufacture of castings for all purposes has grown there to immense proportions, the growth having been especially rapid in recent years. This has made the Western foundry interest numerically large. The scope of the work done is equal to that of the older sections of the country, and in some respects the practice is in advance of that obtaining elsewhere. The West is unconventional in almost everything, and hard and fast rules are not there regarded with the reverence displayed in too many old manufacturing localities. New methods are tried in foundries, and results are often accomplished which startle a hard-headed veteran who thinks he learned it all 40 years ago. At one time there was much criticism of Western work, which was strong enough and answered the purpose but lacked the smooth finish, the careful fitting and the general nicety found in castings turned out by crack Eastern concerns. This was, of course, due to the push and haste, so characteristic of Western life generally, when time was deemed too precious to be wasted in mere frills and furbelows. A change has been made in this respect as in others, and increasing attention is constantly being paid to the details which were once so neglected.

The most progressive foundrymen are among those who are most in favor of an association which shall have for its main object the improvement of foundry methods, to be attained through the mutual interchange of practical ideas. It is thought also that the commercial side of the business need not be neglected, but that more intimate acquaintance and better comprehension of trade conditions would prevent much of the very severe competition which almost wipes out the last vestige of profits. An association of this character could not regulate prices, as that would be wholly outside of its province, but a salutary effect might be exercised in the direction of conservatism. A room in some central location, open daily for the use of members, would be found a great convenience, the value of which would steadily appreciate.

The question naturally occurs: Would not such an association prove of value in the case of wages disputes? Experience teaches that the two cannot be well combined; that an association for the improvement of its members should have nothing to do with the settlement of labor troubles. It should be purely technical or educational, with regular meetings for the reading and discussion of papers or for reports of committees appointed to conduct tests or investigate new methods. The consideration of wages or other questions directly connected with the regulation of employees should be left to individual manufacturers or else should

be taken up by a special organization for that purpose and for no other. The stove manufacturers arrange their affairs in this way, having found it vastly more satisfactory to handle strikes by means of a special organization than through a general association. One great objection to the latter is that many manufacturers prefer to adjust their own labor troubles and will have nothing to do with an association that assumes to take cognizance of such matters. A technical society should therefore be free from such entanglements.

We would suggest to those desirous of forming a Western Foundrymen's Association that reams of paper can be consumed in advocating it and yet no practical results be attained. The plan to be pursued is for a few prominent manufacturers to get together and issue a call to their fellow foundrymen to attend a meeting at a given time and place for the purpose of forming an association. If to such a beginning can be added the selection of a live, well-informed, and above all thoroughly-qualified foundryman as secretary, who will at least for a time furnish lots of practical ideas evoking interesting discussions which will attract a good attendance at the meetings, an association can be started that will be a credit to the men who mold iron in the West.

Wages in Government Establishments in England.

A motion which was recently presented in the British House of Commons, during the discussion on the naval estimates, by Sir John Gorst, member for the great dockyard borough of Portsmouth, and which was accepted by the Government, is likely to have a far-reaching effect upon labor in England in the future. The resolution in question was to the following effect: "That in the opinion of this House no person should in Her Majesty's naval establishments be engaged at wages insufficient for a proper maintenance, and that the conditions of labor as regards hours, wages, insurance against accident, provision for old age, &c., should be such as to afford an example to private employers throughout the country."

Sir John Gorst explained that although his notice referred only to naval establishments, the arguments in its favor were equally applicable to all departments of the Government which employed labor, as also to municipalities, county councils and other public bodies.

That this motion was substantially accepted by the Government is a significant proof of the altered spirit in which Governments nowadays regard the rights of labor. Mr. Campbell-Bannerman, one of the members of Government, in accepting the principle of the resolution, said that, although he did not view it as requisite that Government should move distinctly ahead of public opinion, or force the hands of private employers, it should "keep well abreast of and not in any respect lag behind the action of the wisest, the best, the most intelligent of private employers" in respect of the payment and treatment of its workmen. This step is noteworthy as being the first instance

in which a Government has frankly declared itself not to be in sympathy with the extreme application of the principles of competition, which result in starvation wages and close cutting. As Mr. Bannerman justly remarked on the occasion, employers are ceasing to believe in such methods, not because they have become more philanthropic or more humane, but because they have a more proper regard to their own interests. Starvation wages mean starvation work; therefore, it is not a question of generosity, but of efficiency. A full day's work is not to be got out of a man unless he gets pay for a full day's work. If the sense of the resolution be carried out and all Government and municipal establishments employing labor be kept in line with the best and most enlightened of private employers a direct result in good will follow to the work people concerned, and indirectly the effect will be felt on labor throughout Great Britain, and possibly the world. It is not unlikely that some divergence of opinion may occur when the question in what "proper maintenance" consists comes to be considered, but the term is a liberal one, and is made to include insurance, pensions, &c. Altogether the principle of the movement, namely, that governments should, in their capacity as employers of labor, set an example in the liberal and equitable treatment and remuneration of their work people to all other employers, is one to be commended.

The Depression in British Trade.

Our British cousins are suffering so severely from commercial depression that they are anxiously seeking a remedy. Such of their journals as court free discussion have for some time been printing quite a notable number of communications attacking various time-honored phases of British policy. The disposition is quite marked to depart from conventional methods of reasoning with regard to both finance and tariff regulations. Other writers vigorously attack the heterodox opinions thus advanced and seek to overwhelm their authors by either invective or ridicule. Some of the newspapers have adopted the American custom of addressing a circular letter asking the views of well-known merchants and manufacturers on the causes of the depression and their probable remedy. The London *Ironmonger* has instituted such an inquiry, and publishes responses from such men as Sir Lowthian Bell, Sir Roylton Dixon and G. J. Snelus. Their opinions are decidedly interesting to Americans, who are pleased to have the opportunity to see how such a question is discussed by the British. It must be said that the result is as barren of the suggestion of a practical remedy as similar discussions have been in this country.

In answer to the question, "Will you be good enough to put forward any suggestion or plan which would, in your opinion, tend to revive our manufacturing industries?" Sir Lowthian Bell laconically says: "Beyond my power." William Jacks, M. P., of Glasgow, says the depression is due "not so much to the want of 'push' as a want of readiness on the part of British manufacturers to

adapt themselves to the wants of foreign and, indeed, also home buyers." C. J. Stoddart of the Parkgate Iron Company, suggests as a remedy, "More shipbuilding and more orders from the railroad companies," but Sir Roylton Dixon, the great shipbuilder, says that the depression "in my business I believe to be entirely due to overproduction." The president of the Birmingham Chamber of Commerce suggests as a remedy: "Put moderate duties on manufactured imports," while the president of the Manchester Chamber of Commerce gives as his remedy: "A satisfactory solution of the monetary problem." A leading Liverpool merchant, however, says: "A general reduction in prices alone will lead to a revival of confidence, and the sooner the better." The Mayor of Swansea says: "We more than hold our own with all nations, except, perhaps, America, who use much more extensively the labor-saving machinery, which, again, employs other hands to manufacture." The president of the Coventry Chamber of Commerce says: "We must wait patiently until people have used up the surplus articles they have and are compelled to buy again." Wilson Lloyd, M. P., says: "Bimetallism would greatly revive our manufacturing industries." The master cutler of Sheffield is an advocate of tariffs by which to force commercial treaties. G. J. Snelus favors protective duties and says: "Our Government, instead of breaking up the country and curtailing our markets, should extend our influence, compel other nations to treat us fairly, open up our own colonies and India and induce them to trade with us more freely."

These interviews are commended particularly to those who have the impression that British merchants and manufacturers enjoy exceptional advantages and are free from the tribulations which are suffered by business men on this side of the Atlantic.

Judge Emery Speer of Macon, Ga., rendered a decision in the United States Circuit Court in favor of the petition of members of the Brotherhood of Locomotive Engineers praying the Court to direct its receiver to carry out the contract with the Brotherhood, which was in force when the receiver was appointed. In the course of his opinion Judge Speer said: "The power of the Court has always on proper occasions been exercised to protect the properties under its control from the damaging and unlawful results of a strike of the laborers in its employ. Certainly it follows, then, that it is in the power of the Court in the interest of public order and for the protection of the property under its control to direct a suitable arrangement with its employees or officers, to provide compensation and conditions of their employment and to avoid, if possible, an interruption of their labor and duty which will be disastrous to the trust and injurious to the public. We are satisfied that such arrangements, under proper restrictions, are praiseworthy and beneficial to both parties, and we, therefore, shall not longer hesitate to direct the receiver to enter into an appropriate contract or schedule of rates and regulations with the engineers. The contract will comprehend all engineers employed by the receiver, whether members or non-members of the Brotherhood."

The Legislature of Minnesota is about to reduce the tax on iron ore mined in the State to 12½ cents per ton.

OBITUARY.

AMOS O. WHITE.

Amos O. White, well known in New York as an iron and steel manufacturer, died 3d inst., in this city, in the eighty-sixth year of his age. The body was taken to Syracuse for burial.

ERASTUS CORNING, JR.

Erastus Corning, Jr., oldest son of Erastus Corning, the wealthy iron master, died in Albany, N. Y., 9th inst. after a brief illness. Mr. Corning was born in Albany 41 years ago and for years had passed a retired life because of bodily ailment. He was an entomologist of considerable ability, having one of the best collections of bugs and insects in this section.

W. O. JACOBS.

W. O. Jacobs of Danielsonville, Conn., died March 25, at New York, after a short illness. The deceased was born, reared, and educated at Danielsonville, and had been the principal hardware merchant in the place for the past 12 years. He had recently finished long contemplated changes on his business block and store. Mr. Jacobs was highly respected by all who knew him, and though quiet in manner was allied to all which pertained to the advancement of public good. The deceased was 35 years of age, and leaves a widow and two children.

PERSONAL.

Sir Henry Trueman Wood, one of the British Columbian Commissioners, is now in this country.

Ludwig Tull and Ludwig Hanisch, engineers of the famous Hoerde Works, are now in this country.

On April 15 the Engineers' Club of New York will give a dinner in honor of James Dredge, editor of *Engineering*, who is one of the British World's Fair Commissioners.

Among the German engineers now in this country on their way to the Chicago Exposition are Dr. A. Vietor of Osnabrueck, who represents Herr Haarmann, prominently connected with steel track structure; A. Briegleb of Briegleb, Hansen & Co., builders of turbines, Gotha, and M. Wittmann, engine builder, of Dresden.

Several manufacturers of the Mahoning and Shenango valleys have been reported as saying that the wages paid for skilled labor were altogether too high under the present unfavorable aspect of the market, and unless there should be a change for the better, which from the outlook now is very improbable, a reduction in wages before the signing of the scale for the next year would be unavoidable. A leading manufacturer says: "The present outlook for a prosperous summer in the iron world is not very promising. The cost of production is entirely too high to be in keeping with the condition of affairs at the present time and the only remedy is a reduction in the scale. The wages paid for skilled labor are exorbitant and there has not been a time for years when the manufacturers have realized this condition of affairs as much as at present. Skilled workmen as well as all others should receive just compensation in proportion to their services, but when the iron market is dull and the prices accordingly low, the manufacturers must look to a reduction in the expense of operation in order to protect them from loss."

The New Scrap Iron Classification.

Our readers will recall the publication in these columns of the criticisms by Western scrap iron dealers of the new classification made by the Central Traffic Association. The intervention of the Interstate Commerce Commission was invoked by August Pollak of Chicago, who has been conspicuously active in endeavoring to secure a restoration of former conditions. The correspondence on this subject is of interest to so many of our readers that we have secured copies of it in order to show the motives prompting the railroad officials who made the change. The correspondence, together with Mr. Pollack's review of the whole matter, is as follows:

INTERSTATE COMMERCE COMMISSION,
Office of the Secretary, Washington.

AUGUST POLLAK, ESQ.,
Chicago, Ill.

DEAR SIR.—Referring to your informal complaint of advance in rates on scrap iron material I inclose a copy of letter in relation thereto from Chairman Blanchard of the Central Traffic Association. In case his explanation of such advance is unsatisfactory, the accompanying copies of the act to regulate Commerce and Rules of Practice before the commission will aid you in preparing a formal complaint against the carriers who participate in the transportation of your commodities to Eastern points, and when such a complaint is received at this office it will, if in proper form, be filed and served upon the carriers with notice to answer within the usual time.

(Signed) Very respectfully,
EDW. A. MOSELEY, Secretary.
March 25, 1893.

CENTRAL TRAFFIC ASSOCIATION.
Office of the Commissioner, 217 La Salle street. The Rookery.

EDWARD A. MOSELEY, ESQ.,
Secretary Interstate Commerce Commission,
Washington, D. C.:

DEAR SIR.—Supplementing to my letter of February 15, relative to complaint received by the commission against the recent action of this association and the Joint Committee in changing the rate on scrap iron and other scrap material from that which applies to pig iron, to the higher rates on billets, I hand you herewith copy of reply received from Mr. C. S. Wright, chairman of our Iron Committee, attached to which is copy of letter from Mr. James P. Orr, secretary of the Pittsburgh Freight Committee, which states in detail the reasons for the change in scrap-iron rates complained of.

In compliance with the action of the Freight Committee of this association on the 15th inst., I send you a copy of this correspondence as an answer to your request for a statement of the reasons which justify higher rates on such old iron than those established for pig iron, and trust it may satisfy complainants that the higher rates on scrap iron are justified.

(Signed) Yours very truly,
G. R. BLANCHARD, Commissioner.
CHICAGO, March 20, 1893.

BALTIMORE & OHIO RAILROAD COMPANY.
G. R. BLANCHARD, ESQ.,
Commissioner Central Traffic Association,
Chicago, Ill.:

DEAR SIR.—Inclosed herewith please find letter from Jas. P. Orr, secretary of the Pittsburgh Freight Committee, giving the reasons on which that committee based its recommendations for a change in the scrap-iron rates, which recommendation was approved by the Central Traffic Association, and about which the Interstate Commerce Commission has written you.

This letter has been carefully compiled by the division freight agents of the railroads which handle the bulk of this pig and scrap iron traffic and their judgment in the matter is certainly that of experts, and I hope the same will satisfy you and the Interstate Commerce Commission that under the circumstances their recommendations, justified our action.

Yours truly, C. S. WRIGHT,
Chairman Iron Committee.
PITTSBURGH, PA., March 6, 1893.

PITTSBURGH FREIGHT COMMITTEE.

Mr. C. S. WRIGHT, Chairman Iron Committee,
Pittsburgh, Pa.:

DEAR SIR.—I return herewith papers received with your favor of 15th ult. relative to inquiry from the secretary of the Interstate Commerce Commission on the subject of advance in rates on scrap iron, and in reply de-

sire to state that this action was taken by our committee after careful consideration. It is difficult to state all of the reasons that entered into our decision in this matter, but we will briefly state that in the past, when the rates on pig iron and other articles were much higher than at present, special rates were provided which covered pig iron. With the reduction in the market price of the various articles there was gradually added in with the pig iron a list of articles taking same special rates, covering such iron material as scrap, old rails, car wheels, billets, &c.

Frequent applications were made to add other articles to this list, and it was being extended until it threatened to include the finished product. The rates on pig iron and the articles in question have been materially reduced, and the extension of the list of articles taking these low rates made it necessary, as we believed, to restore, in a measure, the old lines of division between the articles in question for the protection of our revenues.

We are aware of the fact that the question of market price of pig iron as related to scrap iron does not materially differ, although we are convinced from a careful investigation that the average price of scrap used in this market is higher than the average price of pig iron. It is not, however, always possible to base the rates on the price and value of the articles in question on account of the fluctuations in these prices and other matters of similar nature based on the supply and demand. One of the principal questions, in our judgment, which determine the rates is the cost and difficulty of transportation and handling by the railroads.

Take, for instance, pig iron. The general custom is to load this property at the furnace where it is manufactured, and ship the same in large quantities direct to the mills and foundries. The property being loaded on the private siding of shipper, goes direct to the private siding of consignee, and is of necessity promptly unloaded. The cars then promptly reloaded with other freight of a similar nature, for transportation to some other manufacturer. The situation in regard to scrap iron is in a large measure different. It is frequently loaded in the yards of the railroads by a slow and tedious process and brought to the railroad yards at terminal stations, oftentimes being held to be resold, and frequently being held on the tracks of the railroad companies in their crowded yards for days. It is also of frequent occurrence that consignees who are shippers cannot readily be found, and the property is in the meanwhile delayed.

If it becomes necessary to store the same, it is not always convenient to dispose of the property in this manner, being of a bulky nature, and undesirable for storage. If, on account of damage to car or any other reason, it becomes necessary to transfer the property, the difference in the articles is at once made manifest, as pig iron can be readily handled, while with much of the scrap iron it is a difficult process, and oftentimes delays the movement of trains, &c.

On account of the low rates current, and for the purpose of reducing the cost of transportation, the capacity of cars has been largely increased and very heavy loads are now being transported. Cars containing pig iron are therefore heavily loaded, but with much of the scrap, it is difficult to secure heavy loading for cars, and often impossible to load cars to the minimum of 2400 pounds.

There are other reasons which will readily occur to you, which will, we believe, convince you that the action taken by us was entirely proper, and the only complaint that could probably be made against us is that this action was not taken a long time since.

Yours truly,
(Signed) JAMES P. ORR, Secretary.
PITTSBURGH, PA., March 1.

JAMES P. ORR,
Secretary Pittsburgh Freight Committee,
Pittsburgh, Pa.:

DEAR SIR.—Through the kindness of Edw. A. Moseley, secretary of the Interstate Commerce Commission, I have been forwarded copies of correspondence relative to my informal complaint of advance in rates on scrap-iron material.

I notice that your letter of March 1, 1893, setting forth the alleged reasons for the advance in question, was accompanied by a note of C. S. Wright, chairman of Iron Committee, calling attention to the fact "that your letter had been carefully compiled by the division freight agents of the railroads which handle the traffic in question, and that their judgment in the matter is certainly that of experts, &c." It is well that Mr. Wright made the above statement, as without it said "careful compilation of experts" should have never been regarded as such. Before replying to the various points taken in your letter, I wish to state that my informal complaint to the Interstate Commission was of the advance on East-bound traffic, particularly on shipments

to Mahoning Valley points, and of placing in a classification taking rates 17½ per cent. higher than pig iron such cheap grades of scrap as are usually shipped East, which cheap grades of scrap are no further advanced in process of manufacture to the finished product than pig iron and which certainly should take pig-iron rates, and not be classed with half-finished material like slabs, billets, muck bars, &c.

The circular establishing the new classification was signed by the various members of the Chicago Committee of the Central Traffic Association, and when in my informal complaint I scored the gentlemen referred to, and showed the absurdity and injustice and inequality of their action, several of them demurred and claimed to be not at fault, and one of them—the General Western freight agent of a powerful road—told me that the Chicago Committee was simply acting, as it were, as a lot of sheep, following against their own conviction a certain bellwether located at Pittsburgh, and that their action again acted as a sort of bellwether for the lines between Chicago and the Ohio River. This astonishing statement was confirmed by the correspondence with the Interstate Commission, which developed the rather ludicrous feature of the Commissioner of the Central Traffic Association, located at Chicago, asking some parties at Pittsburgh the reason why he—the commissioner—ordered an advance in certain freight rates out of Chicago and then presenting the answer given by said Pittsburgh parties as his reasons.

NOW AS TO YOUR REASONS.

1. There is no danger that rates on scrap iron might extend to cover the finished product. Both are never shipped in the same direction. Scrap iron is shipped from the Western centers of accumulation to the Eastern rolling mills, and the finished product is naturally shipped in the opposite direction, from the Eastern rolling mills to the Western centers of distribution.

2. The protection of your revenue is certainly a commendable object. However, the result accomplished has been a remarkable falling off in the East-bound traffic, as rates established are simply prohibitive, and only "protect the revenues" of the Western consumers, who are using up the material which at the old rates would have been shipped East.

3. The average price of the grades of scrap regarding which the complaint was made is much lower than the prices of pig iron. The cheaper grades of scrap are shipped in large quantities away from Pittsburgh to the Mahoning Valley, and, if I am informed right, the "experts of the Iron Committee," have not advanced the rates on these local shipments.

4. The difference in the cost of transportation between pig iron and scrap iron which you allege does not exist; at least not in the East-bound traffic. The general custom in shipping scrap is just exactly the same as in shipping pig iron. At Chicago fully 75 per cent. of the scrap shipped East comes from the machinery and road departments of connecting roads, and reaches the forwarding lines at junction points.

At least 20 per cent. more comes from side tracks of large industries and scrap-iron yards located on side tracks. Possibly 5 per cent. or less is loaded in terminal railroad yards, but parties loading in that manner employ so many transfer wagons and teams that cars are loaded at the rate of 10 tons per hour. The latest available statistics compiled from my books are for the six months ending June 30, 1892, and show that less than ½ per cent. of the scrap which was shipped by meduring that time was loaded in terminal railroad yards. You also omitted to state the fact that you have established everywhere so-called "car service associations," which are very quick to take reasonable, as well as unreasonable advantage, and charge at the rate of \$365 per car per year for every fraction of a day of overtime.

The "frequent occurrence" of consignees who are shippers not being readily found is rather infrequent. It may occasionally happen that small rural hardware dealers in the vicinity of Pittsburgh ship small quantities of scrap gathered from neighboring farms into your city and consign them to your order, waiting to dispose of them when they come "to town;" but such material is easily stored, as the Union Storage Company will always advance your freight charges. If such occurrences may happen in your city they are unknown in the practice of important shippers. I enjoy the acquaintance of every important scrap shipper in Central Traffic Association territory, and find them to be as wide awake in their methods as any other class of business men, including even such whose occupation seems to be to carry annual passes and meet in hotel parlors to pass almost instantly-broken agreements. Scrap is as promptly unloaded at the private siding of consignee as pig iron, and there is no reason why cars that have

contained scrap are not as promptly reloaded with other freight. The records of the Central Traffic Association will show that in the Mahoning Valley more cars originally coming from the West with scrap iron are again reloaded for the initial point with manufactured material than cars containing pig iron are returned loaded to initial point of shipment.

Regarding the difficulty in transferring scrap between cars, I stand ready to take contract to transfer all the scrap between cars properly matched, in all the railroad yards of Chicago, at 17½ cents per ton, which is one-half the amount of recent advance in freight rates. I should consider myself having a very profitable contract at that rate. The statement that cars loaded with scrap are not loaded to maximum, and occasionally not even to minimum capacity, is entirely without foundation. Statistics from my books for the six months referred to show the average weight of cars I handled to be 39,985 pounds. The lightest and bulkiest class of scrap is old sheet iron and I find the average weight of cars of this class of scrap during the six months to be 35,620 pounds, and then it must be taken into consideration that many empties furnished me were only 30,000 capacity, and very few over 40,000 capacity. The greatest trouble I experience is in obtaining cars with capacity large enough. I can get this statement verified by the assistant general freight agent of one of the largest East-bound lines. It is to the advantage of every scrap shipper to reduce the switching charge per ton, by loading cars to 30 or 35 tons if permitted to do so. I have just finished a contract for 500 tons scrap all loaded in 17 cars.

I should be glad to have an opportunity to reply to your other reasons, which do not all "readily occur to any one." I have several other reasons to show why the advance was entirely unjustified. I have been informed that with the opening of navigation the former rates will be restored, and will only await that time before presenting my formal complaint with such other reasons, to the Interstate Commission, who undoubtedly will afford the desired relief.

Yours very respectfully,

AUGUST POLLAK.

CHICAGO, April 8, 1893.

Pennsylvania Railroad Specifications for Merchant Bar, Iron or Steel.

A very important step has been taken by the Pennsylvania Railroad in superseding its previous specifications for merchant bar iron, dated September 19, by new specifications issued by Theo. N. Ely, at that time General Superintendent of Motive Power, under date of February 20, Altoona, Pa. Until the issue of this new specification the Pennsylvania Railroad declined to receive steel merchant bars, confining its purchases to iron. The specifications which we print below differ from the earlier ones only that they allow a tensile strength of 60,000 pounds, or, in other words, that the old iron specifications are amended by the addition of the word "steel," the insertion of the words "or goes above 60,000 pounds per square inch," and "nor if it shows any difficulty in welding." The following are the specifications in full:

Miscellaneous merchant bar iron or steel for which no special specifications defining shapes and uses are issued, should have a tensile strength of 50,000 to 55,000 pounds per square inch and an elongation of 20 per cent. on section originally 2 inches long.

No iron or steel will be accepted under this specification if tensile strength falls below 48,000 pounds or goes above 60,000 pounds per square inch, nor if elongation is less than 15 per cent. in 2 inches, nor if it shows a granular fracture covering more than 50 per cent. of the fractured surface, nor if it shows any difficulty in welding.

In preparing test pieces from round or rectangular bars, they will be turned or shaped, so that the tested sections may be the central portion of the bar, in all sizes up to 1½ inches in any diametrical or side measurement. In larger sizes test pieces will be made to fall about half way from center to circumference.

Iron and steel will be measured for size and roundness with P. R. R. standard limit gauges.

Round iron or steel will be rejected if it cannot enter the large or plus end of the gauge intended for it in any way, and can enter the small or minus end in any way.

Flat iron or steel will be rejected if it is ⅜ inch wider than the nominal width, and if its thickness varies from the nominal thickness more than is allowed by the limit gauges before mentioned.

Bars of iron ½ inch thick or less, or tortured forms of iron such as angle, tee or channel bars, will be accepted if tensile strength is above 45,000 pounds and elongation above 12 per cent, but the testing of such sizes and sections is optional.

The Foundrymen's Association.

The regular monthly meeting of the Foundrymen's Association was held at the Manufacturers' Club, in Philadelphia, on Wednesday evening, the 5th inst., with a large attendance of the members.

In the absence of the president, the chair was taken by P. D. Wanner of the Mellert Foundry & Machine Company of Reading, Pa.

The Executive Committee, Railways and Freight and Special Committees reported progress.

Four new firms were elected to membership in the association.

Reports from the different sections of the Price Committee were received and discussed. While reporting for his section of the committee, P. D. Wanner said that he thought prices had somewhat improved since last meeting owing to the dry weather experienced during last year. He had noticed in past years that such a condition had a great tendency to stimulate the cast-iron pipe trades owing to the building of water works and the bringing in of additional streams, necessitating many castings and supplies. Such was the case last season and again this season. A good many of the pipe foundries East and West would be fully employed until probably the middle of the year, and, perhaps, until fall. He thought that even if the shops had only low-priced work a better feeling would be created, especially among those whose shops were not quite as well filled and others who had room to fill in at quite an advance in price. Beyond that he did not think he could promise anything.

The capacity was, of course, much beyond the demand. He believed that pipe foundries all over the country would during the year be pretty well supplied with work, and at much better prices. Through the present month prices had, he stated, ranged from \$1.05 to \$1.17, according to the different sizes. Special castings had held their own at about 2½ cents. Some had gone below that price, but there had been no reason at any time to make the cuts. Many would cut for fear some one else might take an order which they considered they ought to have themselves. The lowest price on general castings he had heard reported under this heading was for a letting on lamp posts in the city of New York. There was a letting in that city a few weeks ago for 1200 posts, made in three pieces and weighing about 350 pounds. These posts were taken at \$1.65. This price he thought was a record breaker. He believed the lowest price at which they had previously been supplied was \$1.79. There were four competitors on this letting. One bid was \$1.65, two others \$1.90 and the remaining one \$2.23.

Howard Evans, the secretary, reported a contract just awarded to a concern in Trenton for columns for some works in Boston at a fair price—higher than \$1.65. He was not informed as to the terms of delivery of the columns, but the contract called for 250 tons.

L. B. Whitney of A. Whitney & Sons, manufacturers of car wheels, Philadelphia,

reported that only two manufacturers of car wheels were members of this association, hence there was a difficulty in arranging a meeting of this section of trade. He would, however, mention that his firm were invited, among others, to make a bid on 2400 Pennsylvania standard wheels. They duly quoted a price, but afterward learned that the wheels could be bought at from 50 cents to 75 cents per wheel less than the price at which they could offer. Their price was at \$7.50. A wheel weighs 500 to 600 pounds, and the freight at 9 cents per 100 pounds and the commission to be paid would make the net price to the party taking the contract \$7.10, or less than the iron from which his firm made wheels would cost. As soon as they learned of the offer already made they notified the parties asking for bids that they did not care to bid on business of this kind, as they could not afford to allow their names to appear on castings which could be sold for such a low price. This incident, he thought, proved that there was no necessity for quoting less than at least \$7, and with a little of the nerve displayed by many of the members in the association, he had no doubt the contract might have been taken at \$7.50. All in the business seemed to be afraid of each other.

E. E. Brown of E. E. Brown & Co. reported progress of the small castings section of the committee.

The subject of forming sections in the association being again up for discussion, P. D. Wanner said that it was apparent that very little had been done thus far. According to the report of the Executive Committee it might be judged that it would be a dangerous step so far as the raising of prices was concerned. On this point he wished to say that he agreed in the main. He thought that it would be dangerous for any persons representing the different specialties of this association to combine with a view to raising prices to an unreasonable extent, although it should be understood that they were not running their respective businesses for the fun of the thing. All were working for something, and the general object was to make money for the bettering of conditions. In the present condition of civilization he considered that advance could only be made by profit in their respective lines, and it was, he thought, quite lawful for them to do so. In any combination formed with the view of running a business, improving conditions, or of bringing themselves into position to make money, they were keeping themselves within the law. It was, he said, only where a combination proposed to take hold of something to the exclusion of every one else that the law would step in and declare it an illegal procedure. It was quite advisable for an association to seek to control prices. He believed that every class of men should form associations to advance their trade, and in doing so might have to advance their prices. He understood this as the idea of the present day and regarded it as a leading feature in business in this and every other country. They were all aware of their weakness and therefore united for strength. In union there was strength, and a combination or association would be strong. He thoroughly believed in the principle and they should to that extent favor the measure and try to get those interested together, although he admitted there would be a great deal of trouble in the effort to do so. Some would not want to come into the arrangement for special reasons of their own. He would recommend that such be left out, but it would be well to get in as many as possible. He had been actively connected with the pipe trade for 15 years or more, and an arrangement had been attempted many times to cover the whole country, and especially the East. Some would come in, others stay out, and as a consequence

it always ended in failure. But as he had before stated, he would be willing to stand up with any three, four or five manufacturers in the pipe trade, and adhere to arrangements for an association. There were many things he thought they could do for each other if they would only come together. A common sympathy should exist in regard to orders. What one did not make, another might, and mutual help be beneficial. He thought they should not be discouraged, but go on. It might take some time before all could be brought in, but it was no reason why these sections should not be formed. He had no doubt all discouragements could be overcome. Eventually all would unite, as those who would band together could materially affect those who declined to enter an arrangement, and they would finally wish to come in. He had great faith in the consummation of the arrangement. Very often he had found that those who appeared to be strongest had proved to be the weakest when their business was gone into, and were the first to cry for pardon. Their bravery had been all on the outside.

In regard to the possibility of the pig-iron trade effecting an arrangement for better prices, consumers should not be surprised at any time to find that the pig-iron men had been taking care of themselves in that direction. He certainly should not blame them, and would like to see it. They would probably find that in the South all the pig iron and the furnaces would go into the hands of a few concerns and thus a step toward the control of the whole trade and the command of prices would be made. Such a step would not come unexpected to him, and if the prices were not entirely unreasonable such a course would meet his approval.

The secretary announced that a number of letters had been written to prominent people upon the subject of coke, as the matter had proved of so much interest to the trade, and in response there were representatives that evening among them for the purpose of giving any information required. Many had expressed a desire to hear more on the subject, and particularly as to how coke was manufactured from the beginning; what kind of coal was used; how long it took to turn coal into coke; what kind of water was used in cooling it, and points generally in regard to its manufacture.

Jones Wister of L. & R. Wister & Co., Philadelphia, then made instructive remarks on the subject, supplementing the address delivered by him before the February meeting of the association, embodying a vast amount of information relative to the manufacture of coke and its adaptability to foundry uses. At the close of the address the appreciation of the meeting took the form of a vote of thanks to Mr. Wister.

Mr. Winks of the Davis Coal and Coke Company stated that Mr. Ramsey, the superintendent of his company's West Virginia ovens, had intended to be present and had prepared a paper to read before the meeting. Mr. Ramsey had had a great deal of experience in the manufacture of coke, and it was to be regretted that he had found it impossible to attend.

The chairman invited discussion on the subject of pay days. He considered it an important subject and one which the association would do well to consider at its meetings. He believed wages should be paid once a month only. In paying their hands weekly or fortnightly they were doing more than they ought to do in justice to themselves. He thought that there was no necessity for more than one pay day per month. This course, he claimed, would save a good deal of time and trouble to manufacturers. His company paid their employees every fortnight and experienced a good deal of trouble under that plan. He alluded to the Penn-

sylvania State law on the subject as ineffective and unconstitutional, inasmuch as it could not be carried out. He thought the subject should be open for discussion at future meetings.

Mr. Lewis of the Waterbury Foundry & Machine Company, Waterbury, Conn., said that he had derived much pleasure and instruction from the meeting. He had been in business 47 years with satisfactory results, but he regretted that it had really come to the point in his section when they could not get a decent living on raw castings. This company were large builders of machinery, and it was from this branch of their business he thought that their profits largely accrued. While he would desire an advance in prices, he considered it would be very difficult to get co-operation, there being so many in the trade. He had not as much confidence as he felt he should like to have in its accomplishment, as he thought every business man recognized that each concern was doing the best it could for its own interest. However much it might respect its neighbors and friends in the trade it would figure on a contract as low as possible and would then go a little lower if it found its neighbors were likely to get the job. While he admitted that it would be very well to get up a friendly and fraternal feeling, he did not think an arrangement could rest upon that. A bond would have to be in some way effected whereby a forfeiture in the event of violation of an agreement would be made. As an instance of the working of the friendly plan he cited the case of a meeting in another section called for the purpose of obtaining an advance in prices where a member, after asking to be excused a moment, in the interval rushed to the telegraph office and wired his customers: "Put in your orders. Prices advance to-morrow." He did not think that human nature varied a great deal in the different latitudes. He believed the best method for effecting an arrangement regarding prices would be the one involving forfeiture for violation.

Floor plates in his section were being made at 1½ cents per pound, delivered on cars, and the prices of large castings were very low. He considered that the confidences enjoyed at the meetings of this association were productive of much good to its members. He hoped that the details of foundry practice would not be overlooked in their discussions. He felt that he could learn many things concerning the making and positions of cores and the insuring of good sound surfaces.

The chairman stated that at previous meetings of the association much valuable information had been elicited on the subject of foundry details. Core sand was, however, in his opinion, a good subject for discussion, as also foundry facings. He believed there were a number of gentlemen connected with the association who could furnish valuable information on these subjects. A motion was then made that the Executive Committee be asked to arrange addresses to be delivered at the next meeting on "Foundry Facings" and "Core Sand."

The meeting then adjourned.

For the month of February the ash contents of the export coke of the Tennessee Coal, Iron & Railroad Company, at Blocton, Ala., was 6.45 per cent. For the month of March the analyses were as follows: 1st, 7.95 per cent. ash; 4th, 7.80 per cent. ash; 8th, 7.60 per cent. ash; 11th, 7.75 per cent. ash; 15th, 8.05 per cent. ash; 18th, 7.60 per cent. ash; 22d, 8.10 per cent. ash; 25th, 7.90 per cent. ash.

Reports from Lake Superior state that the upper end of the lake is entirely covered by a vast field of ice, and navigation is not expected to open until late in May.

Southern Pig Iron Freights.

The Louisville & Nashville Railroad Company have issued a new tariff on pig iron from Southern furnaces to points north and west, the advances being effective April 13, and the reductions April 6. The rates are per ton of 2268 pounds, when in carload lots of not less than 17½ tons. The rates between some of the more important points are given below:

To	From— South Pittsburg, Tenn.	Chattanooga, Tenn.	Birmingham District.	Sheffield, Florence, Decatur, Ala., Rockdale, and Napier, Tenn.
Pittsburgh District, Pa.	\$3.81	\$3.90	\$4.40	\$4.15
Alliance, Ohio.	3.26	3.35	3.85	3.60
Ashtabula, Ohio.	3.36	3.45	3.95	3.70
Atchison, Kan.	4.87	5.00	5.00	4.55
Aurora, Ill.	3.47	3.60	3.85	3.60
Beaver Falls, Pa.	3.81	3.90	4.40	4.15
Belleville, Ill.	2.87	3.00	3.25	2.80
Bucyrus, Ohio.	3.06	3.15	3.65	3.40
Buffalo, N. Y.	3.81	3.90	4.40	4.15
Burlington, Iowa.	3.47	3.60	3.85	3.60
Charlestown, W. Va.	2.90	2.99	3.49	3.24
Chicago, Ill.	3.47	3.60	3.85	3.60
Cincinnati, Ohio.	2.14	2.25	2.75	2.50
Cleveland, Ohio.	3.26	3.35	3.85	3.60
Colorado Springs, Col.	6.93	7.06	7.06	6.61
Columbus, Ohio.	2.76	2.85	3.35	3.10
Council Bluffs, Iowa.	4.87	5.00	5.00	4.55
Davenport, Iowa.	3.47	3.60	3.85	3.60
Dayton, Ohio.	2.51	2.60	3.10	2.85
Defiance, Ohio.	3.06	3.15	3.65	3.40
Dubuque, Iowa.	3.87	4.00	4.25	4.00
Duluth, Minn.	5.01	5.14	5.39	5.14
East St. Louis, Ill.	2.87	3.00	3.25	2.80
Evansville, Ind.	2.33	2.50	2.75	2.50
Findlay, Ohio.	3.06	3.15	3.65	3.40
Fort Wayne, Ind.	3.13	3.25	3.50	3.25
Grand Rapids, Mich.	3.73	3.85	4.10	3.85
Hamilton, Ohio.	2.41	2.50	3.00	2.75
Hamilton, Ont.	4.01	4.10	4.60	4.35
Houghton, Mich.	5.01	5.14	5.39	5.14
Indianapolis, Ind.	2.88	3.00	3.25	3.00
Johnstown, Pa.	4.11	4.20	4.70	4.45
Joliet, Ill.	3.47	3.60	3.85	3.60
Kansas City, Mo.	4.87	5.00	5.00	4.55
Kingston, Ont.	5.06	5.15	5.65	5.40
Leavenworth, Kan.	4.87	5.00	5.00	4.55
Little Rock, Ark.	3.38	3.50	3.50	....
Martin's Ferry, Ohio.	3.81	3.90	4.40	4.15
Memphis, Tenn.	1.88	2.00	2.00	....
Milwaukee, Wis. (All rail)	3.87	4.00	4.25	4.00
Milwaukee (Rail and water)	3.4	3.60	3.85	3.60
Minneapolis, Minn.	5.01	5.14	5.39	5.14
Montreal, P. Q.	5.26	5.35	5.85	5.60
Muncie, Ind.	2.74	2.85	3.10	2.85
New Castle, Pa.	3.36	3.45	3.95	3.70
Niles, Ohio.	3.36	3.45	3.95	3.70
Omaha, Neb.	4.87	5.00	5.00	4.55
Peoria, Ill.	3.37	3.50	3.75	3.50
Pueblo, Col.	6.93	7.06	7.06	6.61
Richmond, Ind.	2.83	2.95	3.20	2.95
Salem, Ohio.	3.36	3.45	3.95	3.70
Sioux City, Iowa.	4.87	5.00	5.00	4.55
South Bend, Ind.	3.47	3.60	3.85	3.60
Springfield, Ohio.	2.61	2.70	3.20	2.95
Springfield, Ill.	3.22	3.35	3.60	3.35
St. Louis, Mo.	2.87	3.00	3.25	2.80
St. Paul, Minn.	5.01	5.14	5.39	5.14
Steubenville, Ohio.	3.81	3.90	4.40	4.15
Terra Haute, Ind.	2.77	2.90	3.15	2.90
Toledo, Ohio.	3.06	3.15	3.65	3.40
Topeka, Kan.	7.29	7.42	7.42	6.97
Toronto, Ont.	4.01	4.10	4.60	4.35
West Superior, Wis.	5.01	5.14	5.39	5.14
Wheeling, W. Va.	3.81	3.90	4.40	4.15
Youngstown, Ohio.	3.36	3.45	3.95	3.70
Zanesville, Ohio.	3.16	3.25	3.75	3.50

Before the Royal Commission on Labor it was recently testified that the hours of grocers' assistants in Liverpool, England, average 80 a week and usually five hours on Sundays. It should be added that Sunday work is confined to the stores in the slums. And this for a meager \$4 to \$5 weekly!

Pig Production Stationary.

Both in the aggregate and in the different classes of producing plants grouped according to fuel there have been no striking changes, so that the production of pig iron has remained practically stationary. Nor does there seem from the news which reaches us any marked disposition in any part of the country to either notably increase or seriously curtail the output of metal. Our report of stocks indicates that consumption is not alone coping with the current production, but that it is a little beyond it. In Bessemer pig the very large production of the Pittsburgh district, elsewhere referred to, is significant.

On April 1 the active furnace plant, grouped according to fuel used, possessed the following weekly capacity:

Fuel.	Furnaces.	Tons per Week.
Anthracite	73	33,641
Coke	145	134,488
Charcoal	37	8,504
Total April 1	255	176,633
Total March 1	255	176,978
Changes		345

The weekly product of all the furnaces on April 1 compared as follows with that of preceding periods:

	Furnaces in blast.	Capacity per week. Gross tons.
April 1, 1898	255	176,633
March 1	255	176,978
February 1	251	171,201
January 1	246	173,068
December 1, 1897	246	176,271
November 1	244	171,082
October 1	236	158,027
September 1	236	151,648
August 1	238	155,136
July 1	254	169,151
June 1	269	173,874
May 1	268	177,886
April 1	280	185,462
March 1	305	193,902
February 1	308	187,383
January 1	305	188,082
December 1, 1891	298	188,135
November 1	304	187,685
October 1	306	181,615
September 1	299	170,846
August 1	296	169,576
July 1	293	171,115
June 1	253	146,782
May 1	227	115,590
April 1	228	113,483
March 1	257	134,526
February 1	204	146,050
January 1	302	167,599

The status of the anthracite furnaces was as follows on April 1:

Anthracite Furnaces, April 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York	19	4	2,058	15	5,550
New Jersey	12	3	1,570	9	2,840
Spiegel	3	2	185	1	65
Pennsylvania:					
Lehigh Valley	46	25	9,429	21	8,120
Spiegel	1	1	70	0	0
Schuylkill Valley	30	13	6,650	17	7,420
U. S. Susquehanna Valley	16	8	3,275	8	1,305
L. S. Susquehanna Valley	17	8	5,193	9	2,089
Lebanon Valley	15	9	5,811	6	2,010
Totals	159	73	33,641	86	29,369

For a number of months past our records of active anthracite furnaces show the following:

	Furnaces in blast.	Capacity per week.
April 1, 1898	73	33,641
March 1	74	34,773
February 1	74	32,571
January 1	70	32,772
December 1, 1897	69	33,012
November 1	69	30,839
October 1	69	29,958
September 1	66	27,453
August 1	66	28,821
July 1	72	31,754
June 1	76	33,200
May 1	81	35,473
April 1	84	36,487
March 1	89	38,678
February 1	91	38,124
January 1	94	38,307

December 1, 1891	85	34,905
November 1	87	33,802
October 1	85	32,459
September 1	82	31,214
August 1	88	32,660
July 1	92	37,892
June 1	91	36,561
May 1	90	35,331
April 1	91	36,599
March 1	93	38,543
February 1	95	40,212
January 1	101	43,166

There have been few notable changes during March. One of the speigel furnaces of the New Jersey Zinc & Iron Company, one Swede, in the Schuylkill Valley, and one Crane blew out. On the other hand, there were started Chester on the 27th ult., Anvil and Crumwold, in the Lehigh Valley.

The condition of the coke furnaces is summarized in the following table:

Coke Furnaces, April 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York	7	4	3,640	3	1,300
Pennsylvania:					
Pittsburgh district	21	24	38,320	1	1,245
Spiegel	1	1	507	0	0
Shenango Valley	18	9	9,198	9	6,510
Juniata and Conemaugh Valley	18	9	6,958	9	3,710
Youghiogheny Valley	3	0	0	3	2,215
Miscellaneous	4	1	600	3	1,118
Maryland	5	2	3,174	3	3,190
West Virginia	1	0	0	1	250
Wheeling District	9	8	8,165	1	1,400
Ohio:					
Mahoning Valley	15	9	9,124	6	3,590
Central & Northern	11	8	6,765	3	2,220
Hocking Valley	12	28	410	10	2,300
Hanging Rock	15	8	1,250	7	1,926
Indiana	2	1	250	1	200
Illinois	19	9	13,394	10	15,270
Minnesota	1	1	594	0	0
Wisconsin	4	3	2,985	1	400
Missouri	6	0	0	6	3,550
Colorado	3	2	1,428	1	500
The South:					
Virginia	20	11	5,761	9	4,890
Kentucky	6	3	1,259	3	2,220
Alabama	37	23	16,734	14	8,220
Tennessee	13	6	3,177	7	3,030
Georgia	2	0	0	2	1,045
North Carolina	2	1	95	1	500
Totals	259	145	134,488	114	71,229

As compared with previous months, the active coke furnaces make the following showing:

	Furnaces in blast.	Capacity per week.
April 1, 1898	145	134,488
March 1	145	133,579
February 1	140	129,396
January 1	138	131,731
December 1, 1897	136	133,180
November 1	133	130,673
October 1	128	118,895
September 1	128	114,538
August 1	131	117,984
July 1	140	127,433
June 1	145	128,852
May 1	147	132,313
April 1	152	136,116
March 1	163	143,490
February 1	167	138,268
January 1	163	136,611
December 1, 1891	162	142,747
November 1	162	142,152
October 1	163	135,997
September 1	161	127,664
August 1	154	125,736
July 1	150	122,422
June 1	124	100,165
May 1	98	70,529
April 1	96	67,570
March 1	113	85,069
February 1	125	94,473
January 1	143	112,153

The Pittsburgh district is making an extraordinary record. Every furnace in the district was in blast, with the exception of Soho of Moorhead, McCleane Company, which has been idle for nearly two years. Clinton was blowing out for repairs on the 1st inst. What full work means may be gathered from the fact that within a few tons the product of Allegheny County in March was 170,000 tons.

Valentine started on March 29, and the Cambria entered the month with five furnaces blowing. In Ohio, Glasgow is out, there having been no other important changes in the State. Illinois is running

along as before, having made in March 59,816 tons of iron.

In the South, Virginia has lessened capacity by the stoppage of Pulaski. Alabama had a record of 72,009 tons actual product in March, while Tennessee added about 14,000 tons. In Kentucky the new Watts furnace is again idle, owing to labor troubles.

The condition of the charcoal furnaces is reflected in the following table.

Charcoal Furnaces, April 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New England	13	3	250	10	710
New York	5	2	192	3	391
Pennsylvania	13	3	175	10	760
Maryland	7	0	0	7	694
Virginia	13	0	0	13	827
Ohio	9	3	280	6	745
Kentucky	3	0	0	3	350
Tennessee	7	4	952	3	350
Georgia	3	1	236	2	320
Alabama	13	6	1,640	7	1,510
Michigan	20	9	2,837	11	2,830
Missouri	2	1	335	1	328
Wisconsin	4	3	1,257	1	200
Texas	4	2	300	2	410
Washington	1	0	0	1	170
Oregon	1	0	0	1	225
Totals	118	37	8,504	81	10,820

As compared with previous months, the record of active charcoal furnaces stands as follows:

	Furnaces in blast.	Capacity per week.
April 1, 1898	37	8,504
March 1	36	8,623
February 1	37	8,934
January 1	38	8,865
December 1, 1897	41	9,509
November 1	42	9,540
October 1	39	9,174
September 1	42	9,657
August 1	41	8,331
July 1	42	9,964
June 1	46	11,613
May 1	40	10,100
April 1	44	10,859
March 1	50	11,734
February 1	49	10,991
January 1	48	11,164
December 1, 1891	52	11,033
November 1	55	11,731
October 1	58	13,159
September 1	56	11,968
August 1	54	10,990
July 1	50	10,801
June 1	44	10,056
May 1	39	9,730
April 1	41	9,295
March 1	51	10,890
February 1	56	11,365
January 1	59	12,280

During March one Richmond in Connecticut blew out, while among the recent producers are Chatham in New York and Cumberland in Tennessee.

Stocks.

The position of stocks, sold and unsold, as reported to us April 1, was as follows, the same furnaces being represented as in former months:

	Jan. 1.	Feb. 1.	Mar. 1.	Ap'l 1.
Anthracite pig	135,851	140,214	141,070	138,328
Coke pig	424,481	414,817	392,071	337,080
Charcoal pig	191,574	188,094	202,283	195,866
Totals	749,906	743,125	735,424	671,274

While stocks of anthracite and charcoal irons have remained practically stationary, it will be observed that there has been a marked reduction in the stock of coke iron. The falling off has, in fact, been so heavy and so general along the entire line of coke producers as to warrant the belief that a movement in the right direction has begun in earnest.

We have learned that the Edison Illuminating Company of the City of Philadelphia have given contract to the Babcock & Wilcox Company for 1700 horse-power boilers, built wholly of wrought steel, to carry 225 pounds pressure, for the new addition to their station.

Mesaba Mines.

In *The Iron Age* for March 16 appeared a brief, but complete, description of the Mesabi Chief Mine, on the Mesaba range, north of Duluth, at the head of Lake Superior. This was designed to be the first of a series of descriptive articles on such of the Mesaba properties as deserved special mention, and there appears below an account of the mines of the Lake Superior Iron Company, which have received considerable attention of late by reason of a contract in which the purchasers are New York representatives of the Colby and Rockefeller interests, and through them bringing in the greatest owner of vessel tonnage on the lakes, the American Steel Barge Company, and the probably greatest ore-carrying railway, the Duluth, Missabe & Northern, the combination, in its entirety, being one of very considerable importance on the ore trade in Lake Superior Bessemer.

The Lake Superior Iron Company are a concern capitalized for \$5,000,000, of which Messrs. Trimble and Hibbing of Duluth, both practical iron men, are chief stockholders. They have some 4500 acres of land on the western part of the Mesaba, mostly selected before the majority of the iron explorers had directed any attention to that portion of the range. These lands are mostly leased for a period of 20 years from private owners, many of them men who owned the lands for the heavy growth of white pine covering them. Exploratory operations by test pittings have been carried on for a year on various parts of the lands, and four mines have now been opened. One of these is the east half of the northeast quarter of section 22, township 58, range 20, comprising 80 acres. Three miles southwest of this is an 80-acre tract in section 31, the west half of the southwest quarter. A mile further to the southwest, along the general strike of the range, in the west part of section 1, township 57, range 21, is another mine, and almost adjoining this, in the east part of section 2, is the fourth tract on which the company have deposits of ore. There have been a large number of test pits sunk on these lands, but none of them has punctured the ore body, though in many cases the pits have gone 50 to 65 feet in ore. In the first mentioned mine, in 58-20, there is 10 feet of surface of drift and low-grade ore, and this property is to be mined by the stripping and open-pit method. The other ore bodies are covered by 25 to 30 feet of surface, and will be mined underground. In the four properties there is measured up as actually in sight from the upper surface of the merchantable ore to the bottom of the pits a total of a little over 10,000,000 tons of ore. Over half of this is on one of the tracts, where an entire 40 acres is covered.

The ore of these properties is of slightly better grade, both in iron and phosphorus, than most of the Mesaba mines so far opened. An average of some 25 analyses made from his own samplings by R. N. Dickson, a Cleveland chemist, and taken by him with a view to the general character of the entire ore body, gave the following results:

Metallic iron.....	65.66
Phosphorus.....	0.0275
Manganese.....	0.283
Silica.....	2.70
Alumina.....	1.07
Lime.....	0.131
Magnesia.....	0.092
Sulphur.....	0.011
Combined water and volatile.....	2.88

The highest assay ever made of the ores was 68.53 iron, 0.021 phosphorus, by the mining engineer of the Republic Company, Marquette County. The lowest of the merchantable Bessemer was about 62 iron, showing a remarkable uniformity of the grades of the ore bodies. As will be seen, these ores average very well.

It is estimated that the cost of getting this ore on to cars at the mines, outside the royalty of 25 to 30 cents to the land owners, will not exceed 60 cents per ton. The present freight charge to the docks of the Duluth, Missabe & Northern at Duluth is 80 cents, giving a total cost to the hold of the vessel at the head of the lakes of \$1.70 per ton. Freight rates to Cleveland and other Lake Erie docks averaged last year \$1.20 per ton. To this, of course, is to be added a number of small items.

The Lake Superior Iron Company a few days ago closed a contract with Messrs. C. L. Colby and C. W. Wetmore of New York, and E. B. Bartlett of Brooklyn, by which the former, in consideration of \$100,000 cash and \$150,000 in negotiable 6 per cent. paper, which the latter agreed to negotiate if requested, sell the Eastern parties a half interest in the profits of the mines for the life of the leases—20 years—the purchasers agreeing to carry on all mining operations at their own expense. It is well known here that Messrs. Colby *et al.* acted for a syndicate of capitalists, at the head of whom is John D. Rockefeller, and which includes the stockholders of the American Steel Barge Company, vessel builders and operators, the Duluth, Missabe & Northern Railway, and the syndicate operating what are known as the Wisconsin Central mines on the Gogebic range, representing at present about one-third the output of the Gogebic. This latter syndicate will mine the ore of the Lake Superior; the Duluth, Missabe & Northern road will haul it to the docks, and the Steel Barge Company will convey it to Lake Erie. The miners, who are by contract prohibited from any acts injurious to the other parties, have agreed with the railway to furnish 300,000 tons of ore or more per year after 1893; the railway, agreeing to haul the ore at no higher charge than is made from any other Mesaba mine to the lake over any other road, will be at the mines in July; the Barge Company agreeing to carry the ore to Lake Erie at as low rates as made by any other wild or contract vessels, are ready to care for anywhere from 50,000 to 100,000 tons this year. The contract, in all its ramifications, is probably the most detailed and particular so far made on the Mesaba, extending as well to any operations on undeveloped lands; and it is destined to play a most important part in the development of the new range.

Indications along the Mesaba range point to a consolidation of interests and of the combination of smaller individual mines under one or the other of the leading parties beginning operations on the range. The chief opposing interests are of course, the Duluth, Missabe & Northern road and those behind it, and the Duluth & Iron Range road and those back of it. The latter, with its Vermillion hard-ore interests, has but lately paid any considerable attention to the Mesaba, while the Duluth, Missabe & Northern people have but little hold on the Vermillion. Within the past week the Minnesota Iron Company, who own most of the Duluth & Iron Range road's stock, have secured by lease and purchase 7600 acres of well located lands on the Mesaba and have arranged to thoroughly explore the lands. Something like \$1,250,000 is to be paid on the purchase of 6400 acres of this land. Beside this they have gained control of several outside mines.

The Merritt and Missabe interests have secured options of several of the best mines in 58-17, including 1680 acres of the lands of the Wyoming Iron Company, the majority interest in the Lone Jack and New England mines as well. The deal for the Lake Superior mine was also made through them. Several other large transactions are said to be pending.

MANUFACTURING.

Iron and Steel.

The new plant of the Ellwood Steel Company, at Ellwood City, Pa., manufacturers of sheet steel, has been put in operation, and is expected to be running in all departments about the 15th inst. The product of the new concern will consist of sheets, light sheet and fire bed, either pickled or cold rolled, or both. The officers of the Ellwood Steel Company are: David A. Dangler, president; H. H. Simpers, secretary and manager, and John Sherwin, treasurer.

The Sharon Steel Casting Company, Sharon, Pa., manufacturers of open-hearth steel castings, have recently made quite a number of large spur wheels for shipment to Cleveland, Ohio. The plant of this concern is in full operation, with plenty of orders on hand.

Week before last Mary Furnace of the Ohio Iron & Steel Company of Lowellville, Ohio, turned out 1140 tons of foundry iron, the product for one day being 177½ tons of No. 1. This output consisted of high silicon Mary Ohio Scotch iron, of which the following was the general average of 21 analyses made during the week: Silicon, 3.20; graphite carbon, 3.25; com. carbon, 0.20; phosphorus, 0.552; sulphur, 0.01; manganese, 1.08; iron, 91.70. While the above product in quantity is not out of the ordinary, this concern strive constantly for high silicon and the other desirable qualities in the output of their furnace.

The Shenango Valley Steel Company, New Castle, Pa., have purchased Neshannock Furnace of the Crawford Iron & Steel Company at that place, the consideration reported as being \$250,000. It is said the Shenango Valley Steel Company will increase the capital stock to \$450,000. This furnace was originally built in 1872, being put in operation on December 1 of that year. In 1883 it became the property of the Crawford Iron & Steel Company, with W. E. Reis as manager. The plant consists of one stack 78 x 17 feet, and four Whitwell stoves, with a draft stack 165 feet high. It is claimed that in point of equipment this furnace is superior to any other stack in the Shenango Valley. The output of the furnace is 67,000 net tons per year. The entire output of the furnace will in the future be used by the Shenango Valley Steel Company.

F. W. Wurster & Co., 375 to 393 Kent avenue, Brooklyn, have now in successful operation their rolling mill, which is referred to by the firm as a pioneer enterprise in this line for Brooklyn, and the only concern turning out regular merchant and bar iron in New York or Brooklyn. Within the past year this feature has been added to their older plant, from which is produced wagon springs and axles. Situated but a few feet from the water front, and but 200 or 300 feet from five ferries, these works are very accessible for buyers in both cities, and advantageously situated for economically handling raw materials, coal included. This mill covers an area of 175 x 100 feet, the entire space of all the shops being 250 x 175 feet. Two trains of rolls are run, 10 and 18 inches, being driven by a Watts Campbell Corliss engine of 500 horse-power. The manufacturers state that nothing but No. 1 selected scrap is used. The kinds of iron made and sizes are as follows: Round, ½ to 2½ inches; flat, ½ to 3 inches, and square, ½ to 3½ inches. In this department employment is furnished to something like 50 people, the output being placed at about 500 tons a month.

A half interest in the furnace of the Jenifer Iron Company, at Jenifer, Ala., has been purchased by Stephen Noble, general manager of the Woodstock Iron Company of Anniston, Ala. Mr. Noble has resigned this position and will give his attention to the interests of the Jenifer Furnace. This furnace will turn out a special grade of pig iron.

Gen. John T. Wilder, manager of the Carnegie Land Company and the Carnegie Furnace at Johnson City, Tenn., is authority for the statement that it is now a certainty that the Carnegie Furnace at Johnson City will be blown in by May 1.

A strike occurred last week at the plant of the Watts Steel and Iron Company, at Middleborough, compelling the company to bank their fires. The non-striking men will be employed upon the steel plant and its completion hurried as much as possible. The furnace will not be put in operation again until the steel plant is finished.

Last week a very important meeting of the Tennessee Coal, Iron & Railway Company was held at the office of the company, at Tracy City, Tenn. It was the biennial meeting, and was in the nature of a reorganization of the company. The following directory was elected: Nat. Baxter, Jr., and A. M. Shook of Nashville, T. C. Platt and John H. Inman, Theo.

W. Myers, James T. Woodward, C. C. Baldwin, John C. Haskell and W. S. Gurnee of New York, H. L. DeBardeleben, T. C. Aldrich, David Roberts, T. T. Hillman and Walter Percy of Alabama, C. Adger, M. E. Lopez of St. Augustine and Smythe of Charleston. The directors held a meeting and elected Nat Baxter, Jr., president, H. L. DeBardeleben vice-president, T. C. Aldrich second vice-president and general manager and James Bowron secretary and treasurer. The directors were authorized to proceed with the construction of the contemplated steel plants in Alabama on a large scale.

In referring recently to the new sheet mill which the Sharon Iron Company, Limited, are building at Sharon, Pa., an error was made in dimensions. We are advised by John Stephens, manager of the works, that the mill proper is 175 x 95 feet in size.

The Johnson Company of Johnstown, Pa., have increased their capital stock for the purpose of covering the large investments made from year to year in plant and in business, the capital stock heretofore having remained at a merely nominal amount.

Notwithstanding the unsatisfactory condition of the iron trade, Frank C. Roberts & Co., civil engineers, of Philadelphia, are engaged in the construction of the following plants: Montgomery Iron Company, Port Kennedy, Pa., 20 x 80 blast furnace; Cleveland-Cliffs Iron Company, Michigan, 14 x 70 blast furnace; Antrim Iron Company, Manacelona, Mich., 12 x 60 blast furnace.

The Muncie Iron & Steel Company have completed their new factory building at Muncie, Ind., and the work of placing the furnaces and machinery in position will be pushed forward with a view to operating the work at as early a date as possible.

The plant of the Eureka Iron Company, at Wyandotte, Mich., has been sold to a syndicate of Detroit capitalists, who say they will use it as a nucleus for a large steel plant.

The Pottstown Iron Company of Pottstown, Pa., have made a record, having recently turned out 1265 tons of basic steel in one week.

Pulaski Furnace, Pulaski City, Va., which blew out March 21 for repairs, made 95,100 tons during the blast of about 3½ months then ended.

It is stated that the Bellefonte Furnace, at Bellefonte, Pa., which has been idle for a long time, will resume operations on April 15.

It is announced that the Glendon Iron Company of Glendon, Pa., will shortly rebuild one of their four stacks, and equip the entire plant with new machinery.

Warwick Furnace, at Pottstown, Pa., has been doing some remarkably good work during the past few weeks. During one week recently 102½ tons were turned out, this being the furnace's greatest record.

The Bessemer department of the Wheeling Steel & Iron Company, at Benwood, W. Va., made 514 tons of finished steel in one day recently. This is stated to be the largest day's tonnage ever made by a steel works in the Ohio Valley.

Regarding the statement recently published that the Etna Furnace Company, at Etna, Ga., will build a new blast furnace, the company advise us that a new furnace has been talked of, but nothing definite has yet been decided on.

The Ontario Iron & Steel Company have agreed to establish a blast furnace on Ashbridge's bay marsh, Toronto, the city donating 150 acres of land and a bonus of \$75,000 toward the project. The company propose to erect a furnace having a capacity of 103 tons of pig iron per day.

The sheet mill department of the new tin plant recently erected at Niles, Ohio, by the Falcon Iron & Nail Company was started Tuesday, and the entire industry will be put in full operation in a few days. The buildings are of iron and brick, and the equipments of the latest improved design. The plant will give employment to from 350 to 400 persons and will be a valuable acquisition to the Mahoning Valley.

Clinton Furnace of the Clinton Iron & Steel Company, on the South Side, Pittsburgh, was blown out on April 1, for relining and repairs. This stack is the oldest in Allegheny County, having been built about 40 years ago, but has been remodeled and extended several times during that period. The furnace is a small one, and turns out about 500 tons of iron per week.

The certificate of incorporation of the Consolidated Coal & Iron Company was filed recently in the office of the Clerk of Hudson County, N. J. The incorporators of the company are Louis Hallock, Jr., T. J. Haig and Charles N. King. The certificate of incorporation sets forth that the company begin business with a capital of \$300,000 already paid in

and are authorized to increase their capital to \$10,000,000. The object of the new company, as stated in the certificate of incorporation, is to purchase and hold the capital stock of other corporations engaged in the coal and iron business, and under their charter, which is a very liberal one, the Consolidated Coal & Iron Company can exercise all the rights, powers and privileges as to the stock which they acquire which an individual can do. The incorporators are not recognized as men heretofore known in the coal and iron business.

During the month of March there were turned out at the Beaver Falls Mills, Beaver Falls, Pa., 62,450 kegs of wire nails of the various sizes. This record is ahead of all previous monthly records at the above establishment.

The Youngstown Tin Plate Company, recently organized at Youngstown, Ohio, and now fitting up the old malleable iron works in that city for the manufacture of tin andterne plate, have made application for a charter of incorporation. It is stated that the machinery for the new plant has been purchased, and the manufacture of tin andterne plates will be commenced in a short time.

Moorhead, Brother & Co. of Pittsburgh, operating the Vesuvius Iron & Nail Works, at Sharpsburg, are now manufacturing steel skelp from 5½ inches in size and upward. The concern expect to make the smaller sizes as soon as necessary improvements have been made.

Last week a deed was passed by which the plant of the Beaver Falls Steel Works, at Beaver Falls, Pa., became the property of a syndicate of persons consisting of James M. May, George W. Coates, John B. Reeves and several others at a consideration which has not been made public. Mr. May, one of the purchasers, has been treasurer and superintendent of the plant for a number of years, and Mr. Coates, another of the purchasers, has been chemist of the plant for a long time. It is stated that no change will be made in the directory and the affairs of the concern will be conducted in the future in much the same manner as in the past. The plant of the Beaver Falls Steel Works was erected in 1875, and consists of one 24-pot crucible steel-melting furnace, one Siemens and three coal heating furnaces, two converting furnaces, three steam hammers, four forge fires and two trains of rolls, one 9 and one 16 inch, the product being plow, spring and tool steel, the annual capacity being 1600 net tons.

The Shenango Valley Steel Company, New Castle, Pa., in conjunction with the Wire Nail Company of that place, are about to build two blast furnaces. At present they are using the product of the Crawford and Raney & Berger furnaces.

The Union Iron & Steel Company's mills at Girard and Warren, Ohio, are closed down for the first time in many months.

The Johnson Company of Johnstown, Pa., extensive manufacturers of street railroad outfits, are enlarging their switch department and putting in additional machinery for the rapid handling of their output, among which is a 4-ton Ridgway steam hydraulic crane. This concern use a large number of this style of crane.

Topton Furnace, in the Schuylkill Valley, Pa., has blown in. It had recently been put in thorough repair.

Pulaski Furnace, at Pulaski City, Va., has blown out for the purpose of being repaired.

In one turn of 12 hours there was recently turned out 385 tons of steel rails at the plant of the Bethlehem Iron Company, Bethlehem, Pa.

For some time past the La Belle Steel Company of Allegheny, Pa., have been cogging their ingots in the open-hearth department under the hammer, but the concern have just remodeled an old mill by which these ingots are now being reduced. This billet mill will increase the output about 3000 tons per year, and was put in operation on Monday, the 3d inst. For more than six months past this concern have been supplanting natural gas for fuel by the introduction of manufactured gas. For this purpose 15 Swindell producers have been built by William Swindell & Brothers of Pittsburgh.

Machinery.

It is now stated that the Detroit Equipment Company have decided to remove their plant to Harvey, Ill., in the vicinity of Chicago. J. H. Whiting will also locate his car-wheel foundry at the same place.

The Shultz Belting Company, St. Louis, Mo., have just secured what is, perhaps, one of the largest single orders for belting ever placed in this country, amounting to over \$10,000. Included in this order was 250 feet of 22-inch, 425 feet of 21-inch, 200 feet of 20-inch and 900 feet of 15-inch belting. They

also shipped 500 feet of their patent link belting. In addition to the above there were different quantities of smaller width belts. The bid made by the Shultz Belting Company for this order was nearly \$1500 in excess of the highest bid, but the concern placing the order gave the Shultz belt the preference.

The Jeffrey Mfg. Company of Columbus, Ohio, have completed arrangements with the Pittsburgh Coal & Ore Dump Company of Pittsburgh, Pa., for the sole manufacture and sale of the Wilson patented automatic safety coal and ore dumps, tippie specialties, screens and mine carts. This adds an additional line to the Jeffrey Company's present specialties, all of which will be made at their works in Columbus, Ohio.

The Purdue University, at Lafayette, Ind., has contracted for new shops, the price being \$59,000.

H. R. Frisbie and Frank Kinsley of Bridgeport, Conn., have entered into partnership for the purpose of manufacturing the Frisbie steam whistle, recently illustrated and described in *The Iron Age*.

The Knoxville Building & Contracting Company have been formed at Knoxville, Tenn., for the purpose of doing a general building business throughout the South, and to contract for all classes of stone, brick, wood and iron buildings.

The Wheeler Condenser & Engineering Company have moved into their new offices at 39 and 41 Cortlandt street, New York.

The brass foundry and several other departments of the Auburn Prison, at Auburn, N. Y., have been destroyed by fire. State buildings and stock to the value of \$50,000 were destroyed.

The Gloversville (N. Y.) Foundry & Machine Company have been dissolved. The plant hereafter will be the property of the Fonda, Johnstown & Gloversville Railroad Company, managed and operated as heretofore as railroad repair shops and for general jobbing.

Moore Bros.' iron foundry at Elizabethport, N. J., has been burned at a loss estimated at \$25,000. It will be rebuilt.

In the Circuit Court of Appeals at Philadelphia last week arguments were heard upon the appeal of the Carroll-Porter Boiler & Tank Company of Pittsburgh, against whom a verdict for \$4030.14 was rendered in the Pittsburgh Circuit Court, in favor of the Columbus Machine Company of Columbus, Ohio, for a bill of machinery furnished to the defendants. A decision in the case has not yet been rendered.

The Stark Machine & Tool Company, Buffalo, N. Y., have booked orders for two heavy 10-foot power shears, 15 No. 1 Stark's process retorts, two No. 340 power presses and four outfits of tinners' machines, during the past week.

The James P. Witherow Company of Pittsburgh, successors to James P. Witherow, engineer and contractor, with works at New Castle, Pa., have again put in operation their plant at that place, which has been idle for more than a year. As yet the plant is not in full operation, but at the present time about 60 men are employed and this number will be increased to 100 within a short time. The new concern have already received a number of contracts which insure steady operations for some time to come.

The Crosgrove Engineering Company have opened an office in room 407 Lewis Block, Pittsburgh. The company will make a specialty of structural steel engineering in fire-proof buildings, besides rolling mill, bridge, architectural iron, boiler works and steel ship and navy yard machinery, and will handle the Crosgrove patent universal straightening, bending and punching machine. This machine has been manufactured for a number of years by the Pittsburgh Mfg. Company of Pittsburgh. W. L. Crosgrove, the manager, was for a number of years connected with the structural department of the Homestead works.

The Lloyd Booth Company, Youngstown, Ohio, are making a 126-inch pack shears for the Sharon Iron Company, and a 9-inch and 12 inch mill for the Muncie Iron Company, Ind. The Booth Company are erecting a large new foundry, 130 feet long and 60 feet wide, with two sheds, each 80 feet long and 20 wide.

Miscellaneous.

The Illinois Iron & Bolt Company of Carpentersville, Kane County, Ill., have just completed an important addition to their plant. They have erected a three-story brick building, 185 x 100 feet, which is to be used principally as a warehouse. Very commodious offices have been fitted up on the second floor. The paint shops will occupy a part of the third floor. The building is constructed very substantially and is equipped with a hydraulic elevator. Goods

can be loaded directly into cars on a side track which extends along the building. The company are unusually busy at present on their various specialties, comprising cast wagon skeins, steel wagon skeins, jack screws, parallel vises, sadirons, copying presses, press stands, cast anvils, blacksmith drills, tire benders, tire shrinkers, tuyere irons, swage blocks, &c. Their orders lately have been in excess of their ability to make prompt shipments. On Thursday last they melted 48 tons of iron, which is a very heavy consumption of material for this class of products.

The Marseilles Mfg. Company of Marseilles, Ill., makers of agricultural implements, have signed a contract with the Peoria Improvement Association to remove their plant to Peoria, Ill. It is stated that a plant to cost \$60,000 will be erected, the main structure to be 300 feet long, three stories high, with a wing 400 feet in length.

The Young & Willever Automatic Block Signal Company have bought 4 acres of ground in Pottstown, Pa., on which they will erect a manufactory 300 by 100 feet.

The Erie Car Wheel Works and the Erie Car Work, at Erie, Pa., have been sold at assignee's sale to E. D. Wetmore of Warren, Pa., the former for \$2500 and the latter for \$127, the purchaser assuming the liabilities of the latter, said to be about \$200,000.

It will be remembered that in the early part of 1892 the Westinghouse Electric & Mfg. Company of Pittsburgh were financially crippled to considerable extent, and at one time it seemed as though the affairs of the concern would have to be placed in the hands of a receiver. However, through the efforts of George Westinghouse, chairman, the affairs of the concern were reorganized, and on April 1, 1892, this reorganization went into effect. On the above date about 1200 persons were on the pay rolls, while on April 1, 1893, the concern was employing about 3500 hands. Concerning the financial operations of the company during the first year of the present management, extending from April 1, 1892, to April 1, 1893, some interesting particulars have been obtained. During March, the twelfth month of the fiscal year, the Westinghouse Electric & Mfg. Company manufactured and shipped goods to the value of \$857,000, making the total output for the year about \$5,800,000. The increase in the present capacity of the plant, as compared with the beginning of the year, is nearly 100 per cent., by reason of the addition of new machinery and the lease of the old shops of the Westinghouse Air Brake Company in Allegheny, Pa. The net earnings, after providing for all ordinary and extraordinary expenses, have averaged 25 per cent. of the amount of the sales, so that the earnings for the year ending March 31, 1893, will add between \$1,100,000 and \$1,200,000 to the surplus of the company, after providing for the 7 per cent. dividends on the preferred stock. The concern are now operating three works, located in Pittsburgh, Allegheny and Newark, N. J., giving employment to about 3700 men, the weekly payroll amounting to about \$65,000. During March, which was the banner month of the year, business to the amount of \$615,000 came to the concern without solicitation. Where it formerly cost from \$600 to \$800 per year for repairs to motors, the company now turn out apparatus for which the maximum cost for repairs is \$80,000 per year. In reference to the above statistics George Westinghouse has furnished the following statement: "The above figures answer all the criticisms that have been passed by their competitors upon the business methods of the Westinghouse Electric & Mfg. Company, and particularly refute the assertions so frequently indulged in that the concern, for the sake of doing a large business, were selling their apparatus at unprofitable rates." It is claimed that during the month of March the sales of this concern amounted to more than the business done by the four other identified Westinghouse interests, consisting of the Westinghouse Air Brake Company, Philadelphia Natural Gas Company, Westinghouse Machine Company, and Union Switch and Signal Company.

Seventy-five foreign laborers struck at the National Tube Works, McKeesport, Pa., for higher wages, and their places were at once filled with new men.

Work has begun at Portland Head, Maine, on a bomb-proof battery.

The Jamestown Engineering Appliance Company will locate a factory near Jamestown, N. Y., for the manufacture of engineering instruments.

W. C. Lane, permanent receiver of the United States Rolling Stock Company, has been authorized by Judge Lacombe of the United States Court to sell all the securities, land and patents belonging to the company now in his possession. The value of the securities set forth in his application is \$518,353.90.

TRADE REPORT.

As yet the large buyers of Bessemer Ore and the sellers have not come together. The struggle is one in which incidentally the markets for the crude products, like Bessemer Pig and Steel Billets, are supposed to be influenced to some extent. It is intimated that these markets are being manipulated with an eye to an effect upon the Ore negotiations.

Bessemer Pig is easier in Pittsburgh, chiefly because, as our correspondent telegraphs, some metal has been offered for resale. The heavy product in the Pittsburgh district, 170,000 tons in March, of which nearly all is Bessemer Pig, may be regarded as a factor in the situation. It must be remembered also that there is still considerable reserve capacity in the Chicago district and in the Shenango Valley.

Soft Billets are decidedly easier in the Pittsburgh market, sales having been made at \$22.60, with some evidence tending to show that \$22.50 has been done. It is remarked, however, that this material comes apparently from second hands. In the East makers are endeavoring to make as much as possible out of the situation, but buyers will not meet their views, and the market is dull. One of the largest consumers east of the Allegheny Mountains covered by buying between 25,000 and 30,000 tons some time since.

In Foundry Irons all the important markets reflect a quiet condition of affairs. No large business is reported from any quarter, nor do the conditions affecting the industry seem to have sensibly changed. Statistically, the position remains much as it was, with a slight improvement from the standpoint of the seller.

Those mills which make a specialty of Structural Material complain that thus far the business has brought some disappointment. There is a good deal of work in prospect, but it is not coming out fast enough to bring a sufficiently rapid stream of specifications to the mills.

Plates are dull, and uncomfortably low prices are being made to capture very desirable orders. Our Philadelphia correspondent notes that a 10,000-ton order is expected to go to some Eastern mill this week. There is more activity in Bars, but some of the Western districts do not appear to have their capacity fully engaged, since they are making occasional raids into distant markets by quoting staggering prices.

From the West come reports of a somewhat increased buying movement in Steel Rails. Considering the fact that orders thus far have lagged in an unprecedented manner, it is time that order books were getting into better shape. The Eastern mills have pretty well gleaned what heavy work there is likely to be in their own territory, and consequently do not expect much.

In the metal trades Copper lingers, with very slowly receding prices. Tin recorded a break earlier in the week under review. The bull clique, however, jumped in to support the market and ran prices up again. In the meantime the metal is getting into a steadily worse condition, statistically. There was quite a heavy buying movement in Lead and a moderate advance has been scored and maintained. Tin Plates are easier. Spelter is quiet. It is intimated that pressure is being put on the market in order to bring the weaker producers into that weary frame of mind which should precede their absorption by stronger plants.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., April 11, 1893.

The monotonous condition of the market is still unbroken, and for all practical purposes last week's remarks and last week's prices would be equally applicable to day. There is no scarcity of business and manufacturers say there is no margin for profit, but all the same competition is keen and prices as low as ever. As regards the outlook, there are no new features whatever. There is an enormous amount of work under contract and a still larger amount in prospect, the immediate drawback being, that there is more or less scarcity of work actually in hand. The orders are there, but the specifications are not, which is almost as bad as to be without orders altogether. Then the exceedingly fine outlook is in a measure offset by the unsatisfactory financial situation. It matters very little to a firm how much work they may have the chance of getting four or six months hence, if in the meanwhile they are harassed for money to get out what they already have in hand, and that is precisely what's the matter with more than one large concern. Under these circumstances, and with due regard to facts, it is not entirely safe to report very confidently in regard to business. As compared with last week, there is probably a slightly firmer tone to prices, and with a more settled and easier money market, things are in good shape for improvement, while trimming down has been done to such an extent that it is hardly likely any one would be found unprepared—even if there were another little flurry.

Pig Iron.—The "blowing out" of so many furnaces in Virginia and other districts in close proximity to this market, is gradually manifesting itself in a scarcity of good Irons of all grades. Deliveries are called for with much urgency, and unless the conditions change, there will soon be a veritable scarcity. Buying is not particularly active for the reason that there is very little Iron for sale, so that in the meantime all the efforts are to get quick deliveries, hoping that in a week or two, or some time in the near future, orders can be duplicated at the old prices. Those who have Iron for sale are willing to accommodate their customers, but as a rule makers are not quoting, having sold their entire product up to midsummer, and in some cases still further ahead. Second qualities and some of the newer brands are therefore drawn upon to supplement the more favorite brands; and while prices of these are comparatively low and irregular, they are not as heavy a drag on the market as they were a few weeks ago. Taking everything into account, the chances appear to be favorable for continued improvement, by which it should be understood that if there is no falling off in the demand and no increase in production, sellers will soon gain the upper hand in the market. Under present conditions prices are likely to improve; if conditions change the market will change accordingly. Meanwhile the general asking prices are as follows for Philadelphia and equivalent deliveries, with 25¢ @ 50¢ less on Southern brands at Harrisburg and intermediately to Baltimore:

American Scotch, No. 1X.....	\$16 00	@	\$16 50
American Scotch, No. 2X.....	15 00	@	15 50
Standard Penna. (Lake Ore), No. 1X.....	14 75	@	15 25
Standard Penna. (Lake Ore), No. 2X.....	14 25	@	14 50
Standard Virginia, No. 1X.....	14 50	@	14 75
Standard Virginia, No. 2X.....	13 75	@	14 00
Virginia and Southern, No. 1X.....	14 00	@	14 50
Virginia and Southern, No. 2X.....	13 25	@	13 50
Standard Penna. and Virginia Forge.....	13 00	@	13 25
Ordinary Forge.....	12 50	@	12 75

Freights.

Alabama Furnaces, Rail to Philadelphia.....	\$4.31 @	.....
Alabama Furnaces, Rail and Water to Philadelphia.....	4.01 @	.....
Alabama Furnaces, Rail to Baltimore and Harrisburg.....	4.08 @	.....
Virginia Furnaces, Rail to Philadelphia.....	2.25 @	\$2.75
Virginia Furnaces, Rail to Harrisburg.....	1.50 @	2.00
Virginia Furnaces, Rail to Baltimore.....	1.75 @	2.25

Steel Stock.—There is no change in either price or demand, and quotations are usually given as follows: Bessemer, \$15.25 @ \$15.50, delivered; Standard Bessemer, \$16 @ \$16.25, and Low Phosphorus, \$17.50 @ \$17.75.

Steel Billets.—Business is extremely dull, consumers being very unwilling to renew contracts on terms now available. Nominal quotations are from \$25 to \$25.25, delivered at nearby points, but buyers consider these figures too high, and while there is some probability that makers would shade a little, yet, in the absence of firm offers, they simply bide their time, having, it is claimed, plenty of work to go on with. It is understood that large buyers will not pay over \$24.50. The market is in that condition that no one can tell what a day may bring forth, but the general impression is that sellers will have to yield before they can secure any large amount of business.

Steel Rails.—The situation is unchanged, with no immediate prospect of any improvement. Some of the mills have a good deal of work for May and June, but beyond that there is not much in hand. Girder Rails are in good demand at prices varying from \$32 to \$35, f.o.b. cars, and Standard Rails at the old quotation of \$29.

Muck Bars.—No demand of any account. Makers quote \$22.50 @ \$23, f.o.b. cars mills, but there is really no inquiry and apparently no market.

Bars.—Business is fairly active in some leading mills, others appear to be running very short of work, while once in a while Western mills dump their Iron here at prices which are simply phenomenal. Figures are given for both Bars and Plates which Eastern manufacturers consider absolutely ruinous, and yet there is no doubt that the transactions are genuine, and that Western Iron and Steel can pass through second hands and still compete with the local product direct from the mills. It is not business, however; it is simply raising money without regard to cost. General quotations in this market are 1.62½¢ @ 1.65¢ for Best Refined Iron, and at interior points 1.55¢ @ 1.60¢. Steel Bars 1.50¢ @ 1.85¢, according to quality.

Skelp.—Not much change in this department. The demand is fair, but 1.52½¢ @ 1.55¢, delivered, is about all that sellers dare to ask, with sales chiefly at the inside figure.

Plates.—The feeling in Plates appears to be a little stronger. Mills are very full of work, and if specifications could be had prices on new business would easily stiffen, but so long as any of the mills are in a position to work in orders for a few hundred tons each for quick delivery, prices are naturally easy at rates recently ruling. Mills are promised liberal specifications in course of a few days time, so that on the whole they are inclined to be firmer on long deliveries; but, as already stated, prompt specifications are very attractive. There is a good run of small and medium sized orders, and it is stated to-day on competent authority that one order for 10,000 tons will probably be closed this week by an Eastern mill.

General quotations (delivered) are given as follows:

	Iron.	Steel.
Tank Plates.....	1.80 @ 1.85¢	1.80 @ 1.85¢
Shell.....	2.10 @ 2.20¢	2.10 @ 2.20¢
Flange.....	2.70 @ 2.90¢	2.25 @ 2.40¢
Fire Box.....	3.00 @ 4.00¢	2.50 @ 2.70¢
Special qualities.....	3.25 @ 3.75¢	

Structural Material.—There is no special change in this department, and as regards the volume of business, no room for complaint. There is a great deal of work under contract, and a liberal amount in prospect; but it is claimed that prices are altogether too low, but for some reason or other it seems impossible to secure an advance. Those who ask it simply lose the business, consequently they get back to the old figure, or lower, on the next competition. Nominal quotations are about as follows, but on large orders special rates are frequently made: Beams, Channels or Tees, 2¢ @ 2.20¢, according to size of order; Angles, 1.80¢ @ 1.85¢; Universal Plates, 1.80¢ @ 1.90¢.

Sheets.—There is a good demand for Sheets, and mills are all running full, some at extremely low figures for common qualities, others equally busy on better qualities, for which they secure prices in proportion. On the whole, manufacturers are disposed to be somewhat firm at about the following figures for small lots.

Best Refined, Nos. 14 to 20.....	2.75¢ @ 2.85¢
Best Refined, Nos. 21 to 24.....	2.90¢ @ 3.00¢
Best Refined, Nos. 25 to 26.....	3.15¢ @ 3.20¢
Best Refined, No. 27.....	3.30¢ @ 3.40¢
Best Refined, No. 28.....	3.40¢ @ 3.50¢
Common, ¼¢ less than the above.	

Quotations given as follows are for the best Open-Hearth Steel, ordinary Bessemer being about ½¢ lower than here named:

Best Soft Steel, Nos. 14 to 16.....	2½¢ @ 2½¢
Best Soft Steel, Nos. 18 to 20.....	2½¢ @ 3¢
Best Soft Steel, Nos. 21 to 24.....	3½¢ @ 3½¢
Best Soft Steel, Nos. 25 to 26.....	3½¢ @ 3½¢
Best Soft Steel, Nos. 27 to 28.....	3½¢ @ 3½¢
Best Bloom Sheets, ¼¢ extra over the above prices.	
Best Bloom, Galvanized, discount.....	.70 and 5 ¢ @ 70 and 10 ¢

Old Material.—Market very dull, and prices hard to maintain, especially on No. 1 and No. 2 Wrought. The usual asking prices are about as follows: Old Iron Rails, \$18 @ \$18.50, delivered; Old Street Rails, \$19 @ \$19.50; Old Steel Rails, \$15 @ \$16; No. 1 Railroad Scrap, \$15 @ \$16, Philadelphia, or for deliveries at mills in the interior, \$15.50 @ \$16, according to distance and quality; \$8 @ \$9 for clean new No. 2 Light Scrap; \$7.50 for old No. 2 Light Scrap; \$11.50 @ \$12 for Machinery Scrap; \$12 @ \$12.25 for Wrought Turnings; \$8 for Cast Borings, and nominally \$22 for Old Fish Plates, and \$13 @ \$14 for Old Car Wheels.

Wrought-Iron Pipe.—The situation is not materially changed, but it is claimed that manufacturers are disposed to decline business at current rates, except for immediate deliveries. Anything for long delivery is quoted at somewhat higher figures, but under the most favorable criticism, it must be conceded that the trade is in bad shape, with very little prospect for immediate improvement.

Dovey & Co., Limited, have removed their offices from 209 South Third street to Commercial Union Building, 418 Walnut street.

W. H. Thomson & Co., Iron brokers, have secured a suite of offices in the Bullitt Building and will make a specialty of ship material, and finished Iron and Steel generally.

Boston.

Office of *The Iron Age*, 146 Franklin St., }
BOSTON, April 11, 1893. }

Trade seems to be rather better in Iron within a few days. Perhaps this is because better weather has given a more cheerful aspect to business affairs. It certainly has given builders a start, and it is largely in Building Iron that a more active market is noted. But there is certainly one disagreeable feature in sight. There is serious danger of labor troubles. It comes from good authority that some of the larger Iron and Steel manufacturing concerns in the country are aware of serious danger of strikes before the warm season has more than begun. It is also suggested that builders and other large consumers of Iron and Steel will do well to have this matter in mind, even to the extent of securing Iron and Steel at the present low prices.

Pig Iron.—The market on Pig Iron is steady, with considerable trade, at the rather low prices mentioned a week ago. No lower figures are mentioned this week, though the feeling is still that the buyer of Pig Iron has decidedly the advantage. Trade is of excellent volume in New England, but the production of Iron, particularly Southern Iron, is also great, and the producers are all anxious sellers. The quotations for Southern Iron on the dock in Boston are at: No. 1, \$15 @ \$15.50; No. 2, \$14 @ \$15; No. 3, \$13.50 @ \$14. The demand for Virginia Iron continues to be a strong feature in this market, with some brands actually scarce. This Iron is quoted at \$15.50 for No. 1. Pennsylvania Iron continues in quiet demand in this market, with the quotations at shipping port at: No. 1, \$15; No. 2, \$14.50; Gray Forge, \$13 @ \$13.50. Western Irons continue to sell well here, with the market at \$17 @ \$19 for Iron, ex dock in Boston, according to quality.

Bar Iron.—The Iron merchants here are much interested in the running of the Warr mill at Wareham, and it is now well understood that a company has been formed of three or four gentlemen in the trade here—at least a part of them—and that the company has made the estate an offer for the mill property, or for a lease of it, with the view of running the mill permanently. It is well understood that it is well fitted for the converting of light Scrap Iron, as well as Cast and Wrought Turnings, into Bar Iron. There is an abundance of such material, and it is hoped that the mill may run. In the trade it is understood that there are already a number of order that dealers would be glad to place for just the sort of Bar Iron the mill is capable of making. The quotations on Bar Iron are steady at: Ordinary Old Material Bars, from mill, 1.60¢ @ 1.65¢; from store, 1.65¢ @ 1.70¢. Best Puddled Iron Bars are quoted at 1.85¢ @ 1.95¢ from mill; from store, 2.15¢ @ 2½¢. Norway and Swedish Bars continue quiet, with the market easy at \$65 @ \$67 per ton for bars and shapes.

Building Iron.—It is in Building Iron that a good trade is noted. There are several large contracts that are almost sure to come to a focus this week. It is quite certain that the contract for the Iron for the Union Trust Company building, at Detroit, Mich., will go to a Boston house. In this contract there are some 1200 tons of Beams and Columns. Bids are likely to be closed on Wednesday. The Boston Bridge Works have just secured a contract for another power house for the Brooklyn, N. Y., City Railway. This contract will involve some 300 tons of Building Iron. Two other contracts have already been secured for power stations for the same railway company, by the same enterpris-

ing Boston company; the second one of these contracts involving some 1500 tons of Iron and Steel. The quotations on Building Iron are very steady at: Beams and Channels, 2 07½¢ @ 2.20¢ from mill; from store, 2½¢ @ 2.30¢; Angles, 2¢ @ 2.10¢ from mill; from store, 2½¢ @ 2½¢; Tees, 2.40¢ @ 2½¢ from mill; from store, 2½¢ @ 2½¢.

Steel, Steel Plates and Steel Rails.—The firm feature in Steel is the strong position of Billets. It is admitted to be possible that one or two weak holders may have sold Billets at a shade under the highest prices, but such is always the case with a market that has got pretty well up. It is suggested that Billets are still firm, with none to be had for less than \$23, f.o.b. Pittsburgh. Steel is steadily quoted here at: Bessemer Steel, 2.05¢ @ 2.20¢; Machinery, 2¢ @ 2.15¢; Tire and Sleigh Shoe, 2¢ @ 2.10¢; American Cast, 7¢ @ 7½¢; English Cast, 13¢ @ 15¢. American Steel Rails are still quoted at \$29 at mill. Trade is dull in heavy sections, for the big steam roads are not buying, but there is some business in light sections for street railways. Steel Plates are steady. But it is feared that if the strike, already begun, of the New England boiler makers is continued, that it will hurt the market on Plates. At present quotations are steady at: Tank, 1.95¢ @ 2¢; Shell, 2.05¢ @ 2.10¢; Flange, 2½¢ @ 2.35¢; Fire Box, 2.60¢ @ 3.30¢.

Nails.—Nails are claimed to be in better movement, on the spring weather. Quotations are steady at \$1.50 ¢ keg for carload lots of both Iron and Steel Cut Nails, with \$1.60 for small lots. Steel Wire Nails are also in better request, with prices unchanged.

Pipe and Tubes.—In Pipe there is possibly a slight improvement in trade in the direction of water works, since the frost is getting out of the ground in Southern New England. North and East there is yet a great body of snow and ice. The Pipe card is not changed. Boiler Tubes are steady, but the boiler makers' strike, referred to above, is feared. The quotation is steady at 65 % off on all sizes.

Scrap Iron.—The outlook for Scrap Iron is rather better, since there is so good a prospect that the Warr mill is to continue to run. This mill runs largely on Light Scrap Iron and Turnings, as mentioned above; and, if it continues in operation, there is a much better chance for Scrap of that grade. No. 1 Wrought is quoted at 55¢ @ 60¢ for ordinary lots, with the best selections, including Old Horseshoes, at 60¢ @ 70¢. Light Iron is better at 30¢ @ 40¢; with Machine Shop Scrap better at 25¢ @ 30¢ for Cast and at 30¢ @ 35¢ for Wrought.

Baltimore.

BALTIMORE, April 11, 1893.

The state of business during the week ending to-day is merely a repetition of the one preceding. The demand is generally good and all dealers in this section report that, if anything, the past week's sales have been rather on the line of an increase. So far there has been no indication of any advance in prices; in fact, Bar Iron seems weaker, for while the base prices remain unchanged, there is great slaughtering of extras. At present there are no contracts of magnitude in sight, but the local demand and small orders from mill keep the local houses quite busy. One strange feature regarding this city is the way mill representatives from the mills go by this city to other cities, evidently considering that it is tributary to neighboring cities. The people in these neighboring cities, however, have found it quite unprofitable to try to

do business in competition with dealers here, and for the most part have given it up.

Bar Iron.—No change has been noticed in prices, but it is evident, judging from the quality of some of the Bars coming into this city, some mills are beginning to feel the pressure and are putting inferior material on the market. We quote from mill, 1.75¢ @ 1.85¢; from stock, 1.80¢ @ 2¢.

Plates.—The largest business on the market since our last report was a quantity for Standard Oil Company work. Herebefore the still bottom Steel for this work has been specified to come from one mill which advertises a specialty of this material; this time, however, the Standard has awakened to the fact that there are in the United States several mills who can make Plate and no stipulations were made. The order went to an Eastern mill. Quotations are: Tank, 1.80¢ @ 1.90¢; Shell, 2.15¢ @ 2.25¢; Flange, 2.30¢ @ 2.40¢; Fire Box, 2.45¢ @ 2.55¢; Marine, 2.45¢ @ 2.55¢.

Merchant Steel.—Of this grade Tire Steel has been the most active, but despite this there has been a lowering of prices. Machinery Steel has gone out in small lots. Our quotations are 2.10¢ @ 2.25¢; Tire Steel, 2.05¢ @ 2.15¢; Spring, 2.40¢ @ 2.50¢; Toe Calk, 2.20¢ @ 2.35¢.

Tubes.—Little has been done in this line for immediate use; it is reported, however, that two carloads for the stock of a local house were placed with a Western Pennsylvania mill, which manufactures Iron Tubes only. Discounts are 70 % off from mill and 65 % off from stock.

Cleveland.

CLEVELAND, OHIO, April 11, 1893

Although sales of Ore aggregating probably 800,000 tons have been made, it remains a fact that the market is really not considered fairly opened. The situation is in every way unique and unusual. Bessemer Iron is now quoted in the Cleveland market at \$14. If the joyful boom for this grade of Iron had not been checked by some mysterious process the Ore sales to date would have been close to 3,000,000 tons. Certain it is that some unlooked for event suddenly put an end to all calculations and the buying movement came to a short halt. During the past week a few thousand tons of Bessemer Ore has been let go at figures equivalent to \$3.90, f.o.b. vessels lower lake ports. The Ore dealers insist that this year's prices are based on a \$4 rate for Norrie Ore. Until, however, the vessel owners have issued some kind of an ultimatum nothing of great importance is likely to be done. Every one anticipates an enormous demand for Bessemer Ores, and if terms with the vesselmen had already been agreed upon it would surprise no one if the shipments of new Ore this year aggregated 9,500,000 or perhaps 10,000,000 tons. Non-Bessemer Ores now on the docks are in good demand and are being cleared off rapidly. The market has been unusually quiet the past week, with nothing transpiring to indicate any changes of importance in the situation. It is a fact, however persistently disputed, that buyers are not seeking the market just now. With vessel owners standing out for rates which reason and good sense say should not be paid this year, and with the Iron market in a semi-comatose condition, there is no imperative necessity for the furnacemen to rush in and place their orders now. If the transportation rates from the Lake Superior district should be fixed this week at \$1.10 @ \$1.15 from Ashland, 90¢ from Marquette, and 70¢ @ 75¢ from Escanaba, there would be a possibility of immediate activity not now in view. The agitation

over vessel rates is peculiarly active this spring. A local marine paper says: "Nearly all of the vessels at Ohio ports, for which first cargoes of Coal were sought, have been chartered at 50¢ to the head of Lake Superior, 55¢ to Milwaukee, Green Bay and Chicago, 50¢ to Manitowoc and 45¢ to Gladstone and Chicago. On Wednesday 20 vessels in all had been chartered for hard Coal at Buffalo, the great bulk of the tonnage going to Chicago and Milwaukee at 60¢. One or two engagements have been made for hard coal for the head of Lake Superior, but a fixed rate has not as yet been made. The rate on lumber from Ashland to Buffalo has been fixed at \$2.35." Certain it is that the market just now is quite devoid of news. We hear of small sales of non-Bessemer Ore (new) at \$2.75 @ \$3, and of Bessemer Ores at prices close to \$3 90 per ton, f.o.b. cars Cleveland, but the amounts involved were trifling. The developments of the next two weeks will be awaited with keen interest.

Iron Ore.—The amount of unsold Ore on the docks to day is estimated to be 1,850,000 tons, an excess of only 100,000 tons over the quantity stacked up one year ago. So it appears that while 9,075,000 tons of Ore came down last year, as compared with 7,060,000 tons for the same week in 1891, navigation will open with the condition of the docks much the same as in 1892. The Bessemer Ores left on the docks when winter shut in last December have been practically cleared away and scarcely a firm has over 5000 or 6000 tons to sell. The non-Bessemer are selling all the way from \$2.75 to \$3.50 ¢ ton, f.o.b. cars lower lake ports. The \$3 50 Ores are just outside the Bessemer limit and are, really, but little less valuable. During the past week 41,000 tons of Ore were sent forward to the furnaces from Cleveland, as compared with 30,000 tons for the same week in 1892. The shipments for the week from all Lake Erie ports closely approximate 160,000 tons. The impression prevails that good Bessemer Ores will be selling liberally within 30 days for the figures mentioned in *The Iron Age* several weeks ago, viz., \$3.85 ¢ ton, f.o.b. cars Cleveland.

Pig Iron.—Dealers report the market as "fair." Business is rather slack and transactions are confined to small amounts. Local dealers insist on \$14 ¢ ton as a fair quotation for Bessemer Iron. Production is heavy and the demand is fair, but something seems to have checkmated the boom that began several weeks ago and put the Ore men in such fine feather. A sale of Bessemer at \$13.90 is reported, but the amount involved in the transaction was insignificant. Gray Forge at \$12.40 @ \$12.50 is only fairly firm, and Foundry Irons seem a trifle weaker.

Old Rails.—Only a limited demand for Old Americans is reported at \$19.50, gross ton, Cleveland.

Scrap.—The market is rather weak at \$15 ¢ ton for No. 1 Railroad Wrought; \$11 ¢ ton for Cast Scrap; \$10 ¢ ton for Wrought Turnings, and \$7 ¢ ton for Cast Borings.

Muck Bar.—Not much is being done. The supply seems adequate. An occasional sale at \$24 25 is reported.

Old Wheels.—Dealers quote Old Car Wheels at \$14 ¢ ton, Cleveland.

Wire Nails.—The market is in particularly good shape just now. The mills are well supplied with orders, and the new price—\$1.55 ¢ keg, Cleveland—fixed by the manufacturers last week seems likely to be advanced within ten days or two weeks. Cut Nails are also in good demand.

Freights.—Within the next few days the new schedule of Ore freights to Pitts-

burgh, Wheeling and the valleys will have been made public, thus enabling buyers to estimate very closely the cost of their Ore supply for 1893.

St. Louis.

(By Telegraph.)

Office of The Iron Age,
Bank of Commerce Building,
St. Louis, April 12, 1893.

Pig Iron.—There is a fair volume of trade to report in this department, but single purchases are limited and there are no sales of any magnitude. Southern furnaces continue to keep the pressure up so far as pushing the sale of their product is concerned, and with this fact in view it is superfluous to add that prices fail to show any improvement. It is true, some of the leading concerns refuse to meet prevailing prices, but those furnaces either make a special brand, which is popular with the trade, or are well supplied with orders. Local foundries continue to run full time and are using their full complement of Iron, but expect to pay less for each succeeding purchase. The course of the market during the last two years has been such that it is only natural for them to expect this; but this condition cannot always prevail. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry	\$13.50 @ \$14.00
Southern Coke, No. 2 Foundry	12.25 @ 12.50
Southern Coke, No. 3 Foundry	11.75 @ 12.00
Southern Gray Forge	11.25 @ 11.50
Southern Car Wheel	18.00 @ 18.75
Lake Superior Car Wheel	17.00 @ 17.50
Ohio Softeners	16.25 @ 17.00
Missouri Charcoal, No. 1 Foundry	13.50 @ 14.00

Bar Iron.—Continued improvement is the prevailing feature of the Bar-Iron market. The local consumption is showing a marked increase, and some mills report full order books. Manufacturers, both street and railway, are crowded with work, and prices are being maintained without any special effort. We quote as follows: Lots from mill command 1.57½¢ @ 1.60¢, half extras, f.o.b. cars East St. Louis. Jobbers ask 1.75¢ for lots from store, which price would be shaded somewhat on desirable orders.

Barb Wire.—There does not appear to be any cessation in the demand, and manufacturers have about all they can comfortably handle. Notwithstanding this, however, prices continue to be shaded, and while Painted is quoted at \$2.20 in carload lots to jobbers, the demand is of sufficient strength that \$2.25 could readily be obtained. A continuance of the present demand will no doubt soon make itself felt, and before the month is out the price just mentioned will doubtless prevail. Galvanized is quoted at 40¢ advance over Painted.

Wire Nails.—The remarks concerning Barb Wire apply equally as well to Wire Nails, although if anything the price of Wire Nails is a trifle stronger than Barb Wire. The recent advance does not change the local price, as \$1.70 rate in carload quantities has been the prevailing price for some weeks past. Jobbers quote \$1.75 @ \$1.80, according to quantity.

Pig Lead.—This metal continues to improve and sales have been made during the past week at from 3.85¢ to 3.87½¢. A sale is reported to-day of 100 tons at the latter price. The market is strong and 4¢ will doubtless be reached before any reaction takes place.

Spelter.—For the first time in two months some improvement can be noted in this metal. Offerings are made at 4.05¢ with buyers at 4¢ for good quantities. No material improvement is expected, however, as the stocks on hand are in excess of the trade.

Freight Rates.		Per ton.
Pig Iron.		
Birmingham, Ala., to St. Louis	.....	\$3.25
Chattanooga, Tenn., to St. Louis	.....	3.00
Sheffield, Ala., to St. Louis	.....	2.80
Barb Wire and Wire Nails.		Per cwt.
Pittsburgh, Pa., to St. Louis	.....	18½¢
Salem, Ohio, to St. Louis	.....	16½¢
Cleveland, Ohio, to St. Louis	.....	15¢
Anderson, Ind., to St. Louis	.....	11¢

Cincinnati.

(By Telegraph.)

Office of The Iron Age, Fifth and Main Sts.,
CINCINNATI, April 12, 1893.

There has been no essential change in the market for Pig Iron during the week. There were no large sales, but a fair run of small orders that were from one to five carloads as a rule, and there were several sales of 500 tons, and in exceptional cases 1000 to 2000 ton lots. The aggregate is of fair proportions for a slow and easy market. Factors here look for an improvement in prices by the middle of summer, and are not disposed to contract for long delivery, but buyers see no inducement to buy much beyond their immediate necessities, as their experience for the last year or two has been that each subsequent purchase has been made at lower than previous prices. There is undoubtedly a liberal melting of Iron for general purposes, and if the consumption is not in excess of current production it is keeping closely up to it. A considerable part of the sales of Southern Iron here is destined for the East, but the jobbing foundries in this district are busy, and apparently using more than the usual quantity of Iron. We hear less of exceptionally low prices, and the market may be called a steady one, the demand running mainly on No. 2 Foundry and No. 2 Soft, and on Gray Forge Iron. Quotations are as follows:

Foundry.		
Southern Coke, No. 1	.....	\$13.25 @ \$13.50
Southern Coke, No. 2	.....	11.75 @ 12.00
Southern Coke, No. 3	.....	11.00 @ 11.25
Ohio Soft Stone Coal, No. 1	.....	18.00 @ 18.25
Ohio Soft Stone Coal, No. 2	.....	15.00 @ 15.25
Mahoning and Shenango Valley	.....	14.75 @ 15.00
Hanging Rock Charcoal, No. 1	.....	19.00 @ 19.25
Hanging Rock Charcoal, No. 2	.....	18.00 @ 18.50
Tennessee and Alabama Charcoal, No. 1	.....	15.50 @ 15.75
Tennessee and Alabama Charcoal, No. 2	.....	14.50 @ 14.75
Forge.		
Gray Forge	.....	10.75 @ 11.00
Mottled Neutral Coke	.....	10.50 @ 10.75
Car Wheel and Malleable Irons.		
Standard Southern Car Wheel	.....	18.00 @ 19.00
Lake Superior Car Wheel and Malleable	.....	17.75 @ 18.00

Louisville.

LOUISVILLE, April 10, 1893

There has been no change in the market, and it is not thought that prices will vary for some time. Consumption continues large, and Iron is going forward freely; prices, however, are such that two furnaces are going out of blast, and it is likely that others will. The demand for Soft and Silver Gray Irons is strong, but Mill Irons are in excess, and reports from central Pennsylvania, where large shipments of Southern mills are forwarded, that the Pennsylvania Railroad has decided to suspend all improvements in all departments, it is thought, will have a bad effect upon Iron. Car shops are very busy, running night and day, and expect to be crowded for several months. Charcoal Irons are quiet, and old Wheels in little demand. We quote for cash, f.o.b. cars Louisville.

Southern Coke, No. 1 Foundry	.....	\$13.00 @ \$13.25
Southern Coke, No. 2 Foundry	.....	12.00 @ 12.25
Southern Coke, No. 3 Foundry	.....	11.00 @ 11.25
Southern Coke, Gray Forge	.....	10.75 @ 11.00
Spatbite	.....	12.25 @ 13.25
Southern Charcoal, No. 1 Foundry	.....	15.00 @ 16.00
Southern Car Wheel	.....	17.50 @ 17.75

Chicago.

(By Telegraph.)

Office of The Iron Age, 59 Dearborn street,
CHICAGO, April 12, 1893.

The strike season is now on, and more or less disturbance to business is apprehended. Architectural Iron workers went out the past week, workmen at the World's Fair were out for a day or two and the boilermakers and molders are uneasy.

Pig Iron.—The prospect of a molders' strike, which is now looming up, operates both ways. Some consumers want shipments hurried, while others ask to have deliveries deferred until considerably later in the season. A fair volume of business is being done in local Coke, although the trade is by no means so heavy as it has been. Prices are very steady, but the makers are not looking for an advance, being apparently quite satisfied if they can hold them where they are. Southern Coke is not in general demand, but special trades are being quietly made, some of which run up to very respectable proportions. While our quotations present the prices asked by the most important Southern companies they are cut 25¢ or more by smaller concerns or on desirable orders. Lake Superior Charcoal has not shown any sympathy here with the better movement reported in other markets. Quotations are as follows, cash, f.o.b. Chicago:

Lake Superior Charcoal	.....	\$16.50 @ \$17.00
Local Coke Foundry, No. 1	.....	13.75 @ 14.25
Local Coke Foundry, No. 2	.....	13.00 @ 13.25
Local Coke Foundry, No. 3	.....	12.75 @ 13.00
Local Scotch	.....	\$14.00 @ 15.00
Ohio Strong Softeners	.....	16.00 @ 16.50
Southern Silvery, No. 1	.....	15.00 @ 15.50
Southern Silvery, No. 2	.....	14.50 @ 15.00
Southern Coke, No. 1	.....	13.00 @ 13.25
Southern Coke, No. 2	.....	12.50 @ 12.75
Southern, No. 1, Soft	.....	13.00 @ 13.25
Southern, No. 2, Soft	.....	12.50 @ 12.75
Southern Gray Forge	.....	12.25 @ 12.50
Tennessee Charcoal, No. 1	.....	16.50 @ 17.50
Alabama Car Wheel	.....	18.50 @ 19.00
Coke Bessemer	.....	14.50 @ 15.00
Hocking Valley, No. 1	.....	16.75 @ 17.00
Jackson County Silvery	.....	16.75 @ 17.00

Bars.—The Bar Iron trade is large, but that is the best feature of the market. Prices have weakened for some reason and sellers seem to be at a loss to fix a rate as absolute bottom. The custom now in vogue of naming special rates on nearly every extra causes a great deal more figuring than was formerly the case, and base prices are losing their significance. Base rates run from 1.50¢ to 1.53¢, Chicago, with rumors current that lower figures have been named on good-sized lots. Soft Steel Bars rolled from first class stock are dearer, being quoted 1.70¢, but considerable material is being offered as low as 1.55¢, which is evidently rolled from Rail or Bloom crops. Prices from store are quoted at 1.70¢ @ 1.80¢ on Iron and 1.75¢ @ 1.85¢ on Soft Steel.

Structural Material.—Leading concerns here report larger sales of Beams thus far this year than up to corresponding time last year, caused by the very numerous sales of small lots. Heavy contracts are on the carpet, which are likely to be closed soon. The certainty of deliveries within specified time cuts quite a figure now in securing business. Promises are not regarded so much as the reputation of a concern for keeping its engagements in the past. Mill orders, Chicago delivery, are quoted as follows: Beams, 1.95¢ @ 2.05¢; Angles and Universal Plates, 1.90¢ @ 1.95¢.

Plates.—The demand in this line continues light, and the mills are now reported to be seeking the small trade in competition with dealers. Quotations on mill shipment, Chicago delivery, are as follows, for carload lots: Tank Steel, 1.85¢ @ 1.95¢; Shell Steel, 2.10¢ @ 2.15¢; Flange Steel, 2.25¢ @ 2.30¢; Ordinary Fire Box, 3.50¢.

Store prices continue as follows: Nos. 10 to 14 Iron or Steel Sheets, 2.35¢ @ 2.60¢; Tank Steel, 2.20¢ @ 2.40¢; Shell, 2.40¢ @ 2.60¢; Flange Steel, 2.70¢ @ 2.90¢. Boiler Tubes are quoted nominally at 70¢, but concessions are made from this price according to the specification.

Sheets.—A better feeling exists in the Sheet trade. Inquiries have improved and more heavy buying is reported both in Black and Galvanized Sheets. Common Iron, No. 27, ranges from 2.80¢ to 2.90¢, and Juniata Galvanized is 70 and 7½ % @ 70 and 10 % off for Chicago delivery from mill. Sheet Copper is weak.

Merchant Steel.—The season opens up well. Some heavy transactions have been closed for both regular and special shapes in cheap Steel. Although the implement trade have not yet come into the market, other manufacturing consumers are now buying. Mill shipments of Open-Hearth Machinery and Spring Steel are unchanged at 2¢ @ 2.20¢, Chicago. Bessemer Tire, 1.70¢; Tool Steel, 6¢ @ 7¢ for ordinary and 12¢ upward for specials.

Rails and Track Supplies.—The inquiries for Steel Rails are not more numerous than they were, but they are resulting in business to a greater extent. The tonnage of the past week has thus run up to a much better figure than for some time, and the Rail business is more like itself again, although no single orders have been very large. Prices are firmly maintained at \$30 @ \$32. Spikes are inclined to weakness. Fastenings are quoted as follows: Iron and Steel Splice Bars, 1.65¢ @ 1.70¢; Track Bolts with Hexagon Nuts, 2.60¢ @ 2.65¢; Spikes, 2¢ @ 2.05¢.

Old Rails and Car Wheels.—Old Iron Rails are weaker. Sales made in nearby markets were on a parity of \$17.50 @ \$17.75, Chicago. Old Steel Rails unchanged at \$11.25 @ \$15, according to length. Old Car Wheels seem to be scarce, and those who were recently sellers have turned buyers, but quotations are unchanged at \$14.50 @ \$14.75.

Scrap.—Business has been better in Rolling Mill and Forge stock, but Cast is now quiet on account of cheap Pig Iron. Country dealers are trying to push sales here, which will soon force prices down if continued. Dealers quote as follows per net ton: No. 1 Forge, \$15; No. 1 Mill, \$10.50; Sheet Iron, \$6; Pipes and Flues, \$10; Axles, \$21; Horseshoes, \$15; Fish Plates, \$16.25; Spikes and Bolts, \$14; Cast Borings, \$5.75; Wrought Turnings, \$8; Axle Turnings, \$9.50; Heavy Cast, \$11 @ \$11.25; Stove Plate, \$8.50 @ \$9; Malleable Cast, \$9; Mixed Steel, \$10 @ \$10.50, gross ton; Leaf Steel, \$17.75.

Metals.—Copper is gradually declining, carload lots of Lake now selling at 11½¢ and Casting Copper 11¼¢. Sales of choice brands of Spelter have been made at 4.10¢. Dealers in Pig Lead report that this market has been quiet and dull, with quotations at 3.85¢ @ 3.90¢ asked, and sales at 3½¢ @ 3.90¢, in only a small way. The quantity of Lead offering is not large, but sufficient to meet all requirements.

In addition to their offices and warehouse at 55-59 North Jefferson street, Chicago, Howe, Brown & Co., Limited, have decided to open a branch office May 1 in the Monadnock Building, corner of Jackson and Dearborn streets, Room 405. This is a convenient down-town location, and adjacent to the leading hotels. Business correspondence should be addressed to the offices on North Jefferson street, although Manager E. S. Jackman's headquarters will be in the Monadnock Building.

Metal Market.

Copper.—There has been no change, certainly none for the better, in the condition of the market for this metal. Orders come this way slowly, and are invariably for comparatively small quantities, while inquiries afford no indication of realization of the prophesied lively spring season movement of stock into the channels of consumption. To all accounts the output of the mines, although under restraint, is still excessive, affording sufficient surplus to keep values rather weak. Lake Superior Ingot has been openly offered at 11½¢, regular terms, without stimulating interest on the part of consumers, and offers of futures up to and including December, made on the Metal Exchange, have been quite as futile in attracting speculation. Casting Copper has not fared a great deal better, as far as movement is concerned, and prices are weaker, with anything above 10½¢ strictly the exception on ordinary quantities, and 10¼¢ apparently a price at which orders for round lots would not be passed. A fair business has been effected in this variety of product, but, like the trade in Lake Superior Copper, the movement is still somewhat behind late calculations. At the close of the week some few small parcels of Lake Superior Ingot were sold at 11½¢ for prompt delivery, and on the Metal Exchange there were offers to sell at 11¼¢ for July to September delivery, inclusive.

Pig Tin.—Directly after our review of last week there was a break in prices to 20.45¢ for spot and current month deliveries. Distant futures went to a corresponding point, or say, 20.80¢ for July delivery, and the market presented a rather sickly appearance. The recognized leaders who are supposed to be the heaviest holders, came to the rescue on Saturday, however, taking several hundred tons at from 20.60¢ up to 20.80¢ for May delivery. Following this were smaller purchases for that month at 20.85¢ and for June at as high as 21.05¢, while spot prices were bid up to 20¾¢. This movement, in the face of heavy arrivals and large stock afloat, to say nothing of the unusually liberal spot supply, was rather surprising. It was forcibly illustrated, however, that the bull interest is still in the field and working heroically against seemingly overwhelming odds. Since the first of April, no less than 1830 tons have arrived at this port. Over 1000 tons are due to arrive in a few weeks from London direct, and the chances are that the spot stock at the end of the month will not be far from 5000 tons, the value of which is at least \$2,000,000 at present market prices. Additional lots are on the way from the Straits on shipments made during the latter part of the last month, and it is an open secret that the April shipments from the East will be fully up to the average. Upon the whole, it looks as though the leading operators have a heavy burden to carry pending the fate of the McKinley tariff law. At the close of the week prices advanced to 20.80¢ for prompt and current month delivery and 20.85¢ for May, at which figures about 150 tons changed hands. Bids were made on the Exchange of 21¢ for June, 21.10¢ for July, 21.20¢ for August, 21.40¢ for September, and 21½¢ for October delivery.

Pig Lead.—There has been quite a heavy movement and prices have advanced sharply, leaving the market in strong position at the close, with 4.15¢ @ 4.17½¢ apparently inside figures for either spot stock or near future shipments. Transactions involving at least 1800 tons at 4.10¢ @ 4.15¢ can be traced, and there are indications that entirely distinct business, involving a considerable quantity of Lead, has been put through about which no particulars are divulged. Information comes

from reliable quarters to the effect that consumption is running ahead of the production at present. It is also stated that some purchases have been made recently by local operators who sold "short" a few weeks ago at prices considerably below those ruling at the present time, on the mistaken idea that the output was largely excessive.

Spelter.—Eastern consumers have purchased very indifferently in this market, and the demand here is slow at the present time. Negotiation has revealed the fact that supplies at primary sources are lighter than has been generally estimated and that consumption is of considerable volume despite the indifferent character of buyers' operations. It is not as easy to buy prime Western at 4.80¢ at the present time as it was a week ago. In fact, that price has been refused during the past few days for several brands, and 4.35¢ is generally asked.

Antimony.—Demand is of routine type, and prices have undergone hardly any change. Spot prices remain at about 10½¢ for Hallett's, 10½¢ @ 10¾¢ for L.X. and 10½¢ @ 10¾¢ for Cookson's.

Tin Plate.—Arrivals have been heavy, and coupled with slow demand, serve to soften prices for spot goods. Prices are not positively lower, however, holders being encouraged somewhat by advices from the foreign market. In future deliveries business has been slow. Spot quotations are as follows: Coke Tins—Penlan grade, IC, 14 x 20, scarce; J. B. grade, do., scarce; Bessemer full weight, \$5.50; light weights, \$5.10 @ \$5.12½ for 100 lb, \$5 for 95 lb, \$4.90, nominal, for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$5.60 @ \$5.65; Siemens Steel, IC basis, \$5.75; IX basis, \$6.85. Charcoals—Melyn grade, IC, \$6.50; Crosses, \$8; Allaway grade, IC, \$5.70; Crosses, \$6.90; Grange grade, IC, \$5.80; Crosses, \$7. Charcoal Ternes—Worcester, 14 x 20, \$5.70; do., 20 x 28, \$11.95; M. F., 14 x 20, \$7.25; do., 20 x 28, \$14.50; Dean grade, 14 x 20, \$5.30 @ \$5.37½; do., 20 x 28, \$10.50 @ \$10.70; D. R. D. grade, 14 x 20, \$5.20; do., 20 x 28, \$10.30; Wasters—S. T. P. grade, 14 x 20, \$5; do., 20 x 28 \$9.70; Abercane grade, 14 x 20, \$4.95; do., 20 x 28, \$9.50. Black Plates for tinning, to arrive, are quoted at \$3.65 @ \$3.70 for IX, and \$3.70 @ \$3.75 for IC, to arrive.

C. Kirchhoff, special agent of the United States Geological Survey, has issued the following preliminary statement of the production of Copper in 1892:

	1890. Pounds.	1891. Pounds.	1892. Pounds.
Lake Superior.....	101,745,277	114,222,709	121,984,757
Arizona.....	34,796,889	39,273,279	38,436,090
Montana.....	112,980,806	112,063,320	161,326,128
New Mexico.....	850,034	1,233,197	1,148,706
Colorado.....	3,536,691	6,336,878	7,593,674
Utah.....	1,006,636	1,562,191	2,209,426
California.....	23,347	3,347,405	2,980,044
Idaho.....	87,243	146,326	226,000
Eastern and Southern States.....	378,840	206,463	467,448
Lead Desilverizers, &c.....	4,643,439	4,989,590	5,491,702
Total domestic Copper.....	259,098,092	284,119,764	341,904,976

Reports of stocks of Copper from the producers and the majority of smelters, with the exception of the Calumet and Hecla, the Anaconda and the Quincy mining companies, show a decline from 41,580,179 lb on January 1, 1892, to 38,616,022 lb on January 1, 1893. In the absence of the stocks of the concerns alluded to no general conclusions are warranted.

Canada promises a general revision of the tariff laws next year. The Parliament just adjourned only reduced the duties on binder twine and coal oil.

Financial.

The only cloud hanging over the markets to occasion uneasiness is the renewal of gold exports—\$8,500,000 going out on Wednesday's steamer, and more to follow—coupled with trade and currency conditions that make this movement not only possible but natural. It is well understood that the Austrian Government, operating through the Rothschilds, is providing a metallic basis for its currency, so that in response to the European demand for more gold, America proves to be the most available source of supply, as the yellow metal is not only being displaced here by the continued issue of paper, but diminished exports and augmenting imports make an adverse balance of trade to be adjusted. The foreign commerce of New York for March clearly indicates the general tendency. The imports last month exceeded \$63,000,000, exclusive of specie, being nearly \$10,000,000 over the same month last year, and larger than for any previous March in the history of the port. The principal items were coffee, sugar and rubber, all free goods. For the first three-quarters of the current fiscal year the merchandise imports are \$57,000,000 over any former year. On the other hand, shipments were comparatively meager, and for three months the total, exclusive of specie, were \$23,000,000 below the corresponding total for last year. The recent advance in the price of wheat prevents a free outward movement of grain, but a favorable point is the reviving foreign demand for cotton, and moreover foreigners are again inclined to invest in American securities. As a further check to the drain of gold, a round amount of bonds issued by various corporations may be placed in Europe. Then, too, while Americans will this summer disburse much less money abroad, the expenditures of foreigners here will be largely increased. Prospects are supposed to be much better now than no labor troubles will arise to mar the Columbian Fair. One ground for this assurance is found in the decisions by the United States Courts at Toledo, and New Orleans, which hold it a violation of the Interstate Commerce Act for railroad employees to combine and refuse to handle the traffic of connecting lines, and that a combination which stops the wheels of trade and commerce is illegal. Another assuring circumstance bearing upon our credit abroad and upon confidence in the general situation, arises from the fact that the Administration has no expectation of issuing bonds for the procurement of gold before the meeting of Congress, though it is conceded that the Treasury is liable meanwhile to be considerably depleted.

The stock market was narrow and stagnant. The passage by the Nebraska Legislature of the Maximum Freight Rate bill, which makes an average reduction of 20 per cent., had little influence, for the reason that railroad managers feel that they are protected by the decisions of the United States Circuit Court, which forbid the establishment of unremunerative rates. The buying of Reading was based upon the expectation that, now Mr. McLeod has resigned, the company can be promptly reorganized; but the market as a whole was lacking in interesting features.

United States bonds were quoted as follows:

U. S. 4½s, 1891, extended	99½
U. S. 4s, 1907, registered	113
U. S. 4s, 1907, coupon	113
U. S. currency 68s	105

The Government report on the condition of winter wheat strengthened the upward tendency of prices previously observed, so that the net advance was something like 3¢ per bushel. Springseed in Illinois is somewhat ahead of last year. South of the Ohio River prospects

were never better. In Oregon and Washington the acreage will be increased. Cotton fluctuated under speculative influences. Altogether prices in the merchandise market average better than a year ago, and it does not appear that uneasiness in financial circles has had much effect outside, nor has tariff agitation.

The loan market was affected to a moderate extent by the large engagements of gold for export. Time money is in fair demand, and the banks still prefer to place their available lines on call. Rates were quoted at 5½ per cent. for 60 and 90 days on the best collateral, and 6 per cent. for longer dates. The inquiry for commercial paper continued light, and the demand from the Eastern States was limited, because many of the banks in that section have suffered, to some extent, by the recent failures in Minneapolis and Nashville. The bank return showed a loss of \$1,608,000 in cash, and of \$1,450,125 in surplus reserve, which now stands at \$9,212,950.

Bar silver in London, 38½d. per ounce. New York dealers' price for assay bars, 83½¢ per ounce.

Although the shipments of freight from Chicago last week were only 70,379 tons, against 82,333 the previous week and 89,870 a year ago, yet the west-bound traffic is very heavy in consequence of the Columbian Fair.

New York.

Office of *The Iron Age*, 96-102 Reade street, New York, April 12, 1893.

Pig Iron.—Buying has been light during the past week, but prices, so far as standard brands are concerned, are steady. We quote Northern brands at \$14.50 @ \$15.25 for No. 1; \$13.75 @ \$14.50 for No. 2; \$12.75 @ \$13.50 for Gray Forge, tidewater. Southern Iron, same delivery, \$14.25 @ \$14.50 for No. 1; \$13 @ \$13.75 for No. 2 and No. 1 Soft; \$12 @ \$12.50 for Gray Forge.

Spiegeleisen and Ferromanganese.—There has been no business of consequence since our last report. Eighty % Ferromanganese, \$57 @ \$57.50; 10 to 12 % Spiegeleisen, \$22 @ \$22.50; 20 % Spiegeleisen, \$25 @ \$25.50. A number of works in this country are now buying imported Ferrochrome, sales of which have been made at \$460 per ton.

Billets and Rods.—As yet the negotiations for a lot of 5000 tons of Billets have not been closed. There has been a sale of a few hundred tons of Western Wire Rods at about \$33.50, tidewater. We quote Steel Billets, tidewater, \$25.25 @ \$25.50; foreign Steel Billets, nominally, \$29 @ \$29.50; domestic Wire Rods, \$33.50 @ \$33.75; foreign Wire Rods, nominally, \$40 @ \$40.50, and Swedish Rods, \$52 @ \$53.

Steel Rails.—The market has been very quiet, with no sales of consequence reported. We quote \$29, mill or tidewater, for Standard sections, and \$31.50 @ \$32.50 for Girder Rails.

Track Material.—Spikes are quoted at 1.90¢ @ 1.95¢; Fish Plates at 1.55¢ @ 1.60¢; Track Bolts, square nuts, at 2.45¢ @ 2.50¢, and hexagon nuts at 2.55¢ @ 2.60¢, delivered.

Manufactured Iron and Steel.—During the week the contract for the Continental Fire Insurance building and for a smaller structure in Maiden lane were closed, but on the whole large work is coming out in a disappointingly slow way. Plates continue irregular. A contract for about 2000 tons of Plates for gas works for this city was closed during the week. We quote: Beams up to 15 inch. 1.90¢ @ 2.15¢; 20-inch, 2.25¢ @ 2.40¢ for round lots; Angles, 1.8¢ @ 2¢; Universal Mill Plates, 1.85¢ @ 1.90¢; Tees, 2¢ @ 2.20¢; Channels, 2¢ @ 2.10¢,

on dock. Car Truck Channels, 1.90¢ @ 2.10¢. Steel Plates are 1.80¢ @ 2¢ for Tank; 2.10¢ @ 2.25¢ for Shell; 2.25¢ @ 2.50¢ for Flange, and 2.50¢ @ 2.80¢ for Fire Box, on dock. Refined Bars are 1.65¢ @ 1.9¢, on dock, and common 1.55¢ @ 1.60¢. Scrap Axles are quotable at 1.90¢ @ 2.10¢, delivered. Steel Axles, 1.85¢ @ 2¢, and Links and Pins, 1.85¢ @ 2.10¢; Steel Hoops, 1.80¢ @ 1.90¢, delivered; Cotton Ties, 80¢ per bundle, at mill.

Merchant Steel.—The market is dull, with Machinery at 1.75¢ @ 2¢; Toe Calk, 2¢ @ 2.25¢; and Sleigh Shoe, 1.75¢ @ 1.90¢.

Pittsburgh.

(By Mail.)

Office of *The Iron Age*, Hamilton Building, Pittsburgh, April 11, 1893.

Taken as a whole the Iron and Steel trades are in fairly satisfactory condition. As one prominent manufacturer tersely states: "There is nothing to brag about, and on the other hand, nothing to cry about." The volume of business is large in the aggregate, and indications favor a heavy consumption of material right along. In regard to prices very little that is favorable can be said, and this, of course, is the discouraging feature of the market. Under the influence of certain extraordinary conditions, Bessemer Pig has declined within the past 15 days to \$13.75, Pittsburgh, and is weak at that price. Billets that sold up to \$23.25 two or three weeks ago, have declined squarely to \$22.75, Pittsburgh, several sales at that price having been made within the past week. Plates and Structural Material are in fair demand, with prices very low, and no immediate prospects of betterment. Wire and Wire Nails are in heavy demand, and the advanced prices are being maintained. Pipes and Tubes are in better demand, and makers hope that prices, too, will soon improve. In Rails a fair movement is reported, with some business claimed to be in sight.

The deadlock between the Ore and furnace men still continues, with a strong probability that some business will be done before long. The prospect of an increase of 10¢ per ton in carrying rates, referred to elsewhere, is not relished by either Ore sellers or buyers.

Structural Material.—Although the weather for the past month or so has been everything that could be desired, the expected increase in volume of business in Structural Material has not come, and there is considerable disappointment over the present situation. Makers when asked why the demand has not come up to expectations are at a loss to answer, and simply say that they cannot understand it. With the very favorable prices at which Shapes can be obtained, the fact that the demand has not improved, with all conditions favoring a heavy tonnage, is somewhat puzzling. Prices have not shown any decided change during the past week and we continue to quote Beams and Channels on a basis of 1.75¢ @ 1.80¢, according to order. Angles, 1.65¢ @ 1.70¢; Tees, 1.90¢, and Z Bars, 1.80¢ @ 1.90¢.

Plates.—There is nothing new to report this week; the volume of business is fair, but reaching over such a large territory and with such a large capacity for production, the best that can be said is, that mills are moderately busy, but are not rushed with work, and no specially important lots have been contracted for during the past two or three weeks. Prices are unchanged and we repeat quotations of last week, as follows: Ordinary Fire Box at 2.25¢ @ 2.50¢; best Quality, 3¢ @ 3.25¢; Flange, 1.90¢ @ 2¢; Tank, 1.65¢ @ 1.70¢; Shell, 1.75¢ @ 1.80¢; Universal Plates, 1.70¢ @ 1.75¢.

Ferromanganese.—A fair demand is going, but we are not advised of any large contracts placed for some time. We continue to quote at \$59, f.o.b. cars Pittsburgh, for 80 %, and it is claimed that \$59.25 is being obtained for small lots.

Muck Bars.—The market is exceedingly dull and very little material is being sold. As a consequence prices are weak and we quote best grades of Muck Bars at \$24 @ \$24.15, delivered at buyer's mill, the first named being the ruling prices.

Bars.—For the past two or three weeks the condition of this trade has improved considerably, but there yet remains much room for further improvement. This applies not only to demand, but also to prices. While there has been no decided advance, many low quotations have been withdrawn and the market for Steel Bars is correctly represented by the quotation of 1.55¢, half extras. Some makers charge a slightly higher price for Refined Iron Bars, and are asking 1.60¢ at mill, half extras. Reports from the Mahoning Valley indicate that mills in that section are only fairly well employed, and with prices ruling at 1.42½¢ @ 1.45¢, half extras, at mill.

Steel Rails.—We are advised that during the past two weeks two or three Western roads have placed orders for a fair tonnage of Rails, and the outlook for more business from the West is encouraging. The old price of \$29 at mill for standard sections is being maintained, but for Rails lighter than 50 pounds it is understood that very low prices are ruling.

Wire Rods.—The improvement in this branch of trade noted last week continues, and Wire Rods are firm at \$31, f.o.b. cars Pittsburgh. We are advised of a sale of 400 tons for April delivery at that price.

Pipes and Tubes.—The improved weather of the past month has had the effect of materially increasing inquiries, and as a result makers of Pipes and Tubes are considerably encouraged. They report quite an increase in the demand for the larger sized pipes, brought about, of course, by the resumption of Pipe laying. As yet prices continue very low, but with a greatly improved demand, makers hope that some improvement in the direction of prices will soon take place. For a long time past no attention has been paid to the official discount list. A meeting of the Wrought Iron Pipe and Tube Manufacturers' Association will be held in the Fifth Avenue Hotel, New York City, on Thursday, the 13th inst.

Wire and Cut Nails.—All reports indicate that the recent advance in price of Wire Nails to \$1.55 in carload lots, Pittsburgh or Cleveland district, is being firmly maintained. In addition we are advised that a fair amount of business is being placed at the new rate, although the greater part of the large contracts was placed some time ago. A report was current here a few days ago that Pittsburgh was selling Wire Nails at a price slightly less than \$1.55, but upon investigation it is believed the report is untrue. In Cut Nails the situation is only fairly satisfactory. There has been considerable increase in the volume of business, but the new card is not being observed, mills in the Wheeling district having shaded it in a number of transactions to the extent of 10¢ per keg, and in some cases 12½¢ per keg. For ordinary lots it is claimed that card rates are being obtained.

Wire.—The condition of this branch of the trade continues very satisfactory, the only trouble being that certain kinds of Wire are very hard to obtain, and nearly all mills are more or less behind in deliveries. Prices are firmly maintained, and in some

recent cases mills were compelled to refuse orders on account of their product being sold so far ahead. We quote Painted Barb Wire at 2.20¢ in carload lots and 2.25¢ in less quantities, and Galvanized Barb Wire at 40¢ additional on above prices. The demand for Plain Wire continues very heavy, but prices are unchanged, and we repeat quotations of last week as follows: Nos. 6 to 9 at 1.70¢ in carload lots and 1.75¢ in less quantities. Nos. 10 and 11 we quote at 1.80¢ @ 2¢; No. 12 at 1.90¢; No. 13 at 2¢ and No. 14 at 2.15¢.

Skelp Iron.—The improvement in the Pipe and Tube market noted elsewhere has resulted in a slightly improved demand for Skelp, but as yet there has been no improvement in prices. We continue to quote Grooved at 1.50¢, and Sheared at 1.70¢, four months, or 2 % off for cash.

Sheets.—There is a moderate amount of new business coming in, principally for small lots, but mills are kept busily employed on season contracts booked some time ago. Prices have undergone no change since our report of last week, and we continue to quote Common Box Annealed Sheets as follows: No. 24, 2.50¢ @ 2.55¢; No. 26, 2.60¢ @ 2.65¢; No. 27, 2.70¢ @ 2.75¢. For Soft Steel Sheets some mills charge about \$1 per ton advance on above prices. There is a heavy demand for Galvanized, due to the fine weather of the past three or four weeks, and the consumption of this grade will undoubtedly be quite heavy for the next four or five months. We continue to quote Best Bloom at 70 and 10 % in carload lots and 70 and 5 % in smaller quantities.

Merchant Steel.—Although the season is about at hand for large contracts to be placed buyers are holding back, and, as a result, the moderate amount of business going is for small lots. Tool Steel is probably in better demand at this time than the other grades. Prices continue low, and we continue to quote Tire Steel at 2¢ @ 2.05¢ and Spring and Machinery Steel 1.70¢ @ 1.75¢. Tool Steel is selling at 5¢ and upwards, according to grade.

Connellsville Coke.—For the week ending April 1 there were 12,932 ovens in the Connellsville region in blast and 4395 idle, with a total estimated production of 125,980 tons. Compared with the production of the previous week, this was an increase of 160 tons. There has been no change in prices and we continue to quote Furnace Coke at \$1.60, in tons of 2000 lb, f.o.b. cars in Connellsville region. Foundry Coke continues to rule at \$2.15 to dealers and \$2.30 to consumers.

(By Telegraph, April 12., 1 p.m.)

Pig Iron.—The conditions surrounding the Bessemer Pig market at this time are such that a decided change one way or the other is liable to take place on very short notice. We have already pointed out that the sharp decline in Bessemer has been due largely to manipulation, and just how much lower prices will go cannot, of course, be stated. A month ago furnaces were largely sold ahead, and stock of Iron had been very much reduced. This, with an active demand, caused a rapid advance in values, until Bessemer touched \$14.10, Pittsburgh, with conditions favorable for the advance being maintained. However, this satisfactory condition of the market was disturbed by the offering of Iron which had been sold because shipment was deferred by request of the buyer. Should considerable quantities of this Iron

be forced on the market it will send prices still lower, but, on the other hand, if shipments are resumed to the original buyer it will favorably affect the situation. Among buyers the impression prevails that prices will go lower and offers of Bessemer within the last week at \$13.75, Pittsburgh, have been declined. While all indications point to lower values, there are those in the trade who believe that the downward tendency will soon be arrested. As far as known, no sales of Bessemer have been made at less than \$13.75, Pittsburgh, and we quote the market to-day at \$13.75 @ \$13.85, with the first named as the ruling price. Gray Forge is in fair demand and the established price of \$12.25, Pittsburgh, is being maintained. We quote as follows:

Neutral Gray Forge.....	12.25 @	cash.
All-Ore Mill.....	12.50 @	"
No. 1 Foundry.....	13.75 @	14.00. "
No. 2 Foundry.....	12.75 @	13.00. "
Charcoal Foundry No. 1....	17.00 @	18.00. "
Charcoal Foundry No. 2....	16.50 @	17.00. "
Bessemer Pig.....	13.75 @	13.85. "

We note a sale of 4000 tons of Bessemer for April and May delivery at \$13.75, Pittsburgh, and one of 1000 for April delivery at \$13.85, Pittsburgh; also, a sale of 1500 tons of Gray Forge for April, May and June at \$12.25, Pittsburgh.

Billets.—With makers of Steel in Pittsburgh and the Wheeling district well sold up, there is considerable Steel in the hands of brokers and middlemen being offered for sale, and with buyers holding off for lower prices, there has been a further decline in the market. Within the past week Steel has been sold up to \$23 and down to \$22.60, with well defined rumors that \$22.50 at maker's mill has been touched. The fact should be noted that this cheap Steel is not being sold by makers but by brokers, some of whom have shown a disposition within the past week to dispose of their holdings. Steel offered within a few days at a price equal to \$22.75, Pittsburgh, has been declined by buyers. The taking out of the market of the product of a large Pittsburgh mill and the probable closing down of a Wheeling mill for an extended period are expected to favorably affect the market. We note a sale of 500 tons at a price equal to \$22.75 at maker's mill, and two sales aggregating about 800 tons at a price equal to about \$22.60 at maker's mill.

At a meeting of the Ore-carrying lines, held in Pittsburgh recently, it was agreed to advance rates for carrying Ore to \$1.15 per gross ton from Lake points, to go into effect on May 1, providing lines from Buffalo to Eastern points would agree to make a similar advance.

Jones & Laughlins, Limited, of the American Iron & Steel Works, Pittsburgh, are building a small or auxiliary Billet mill to their present large Billet mill. It is the intention of the firm, when this small mill is completed, to take Billets measuring 4 x 4 inches and roll them down in the small mill as low as 1 inch in size without reheating. At present this firm does not turn out any Billets smaller than the regulation size, 4 x 4 inches. It is expected to have the new mill completed and in operation about August 1 next.

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, April 12, 1893.

Prices for Pig Iron warrants have undergone very little change. Late transactions were at 41/ for Scotch, 34/4½ for Cleveland and 45/7½ for Hematite. Business has been moderate all through, but the fact that comparatively few warrants are offered serves to hold values steady. Prospects are that the supply will be heavier in the near future, however, since there are now 71 Scotch and 121 English furnaces in blast, but the market for English Iron is steadied by increase in shipments that prevented stocks exceeding previous estimates. Stocks in public stores include 342,000 tons Scotch and 65,000 tons Cleveland Iron. March exports were 51,000 tons, against 57,000 tons during the corresponding month last year.

Pig Tin has been irregular. Prices receded early in the week owing to moderate demand and meagre outside speculative interest, but later purchases by American operators, who seem to be acquiring stock for shipment prior to July, stiffened prices for prompt and near futures considerably. Distant futures are still at a heavy discount and difficult to sell.

The reduction in visible supply caused some buying of Copper early in the week, under which prices were held quite steady. Subsequent realizations, together with adverse reports from America and Paris, caused a reaction, but later there was a firmer feeling. Outside speculative interest continues small. There were sales some little time ago of 600 tons Montana Matte at 9/4½, but more recently about 240 tons were parted with at 9/, and the demand at present is slow.

Tin Plate market has been quieter, but prices remain very steady. Fair sales of Siemens' Cokes and Wasters at full rates; better inquiry from Canada. Terns and Black Plates scarce. March exports, 42,000 tons, of which 31,000 tons were to United States, against 36,000 tons and 23,000 tons respectively during the corresponding month last year.

Scotch Pig Iron.—Market very quiet and little change in prices:

No. 1 Coltness, f.o.b. Glasgow	54/
No. 1 Summerlee, " "	49/6
No. 1 Gartsherrie, " "	47/6
No. 1 Langloan, " "	53/
No. 1 Cambro, " "	43/6
No. 1 Shotts, " at Leith	52/9
No. 1 Glegarnook, " Ardrossan	48/6
No. 1 Dalmellington, " "	46/
No. 1 Eglinton, " "	44/

Steamer freights, Glasgow to New York, 2 3/4; Liverpool to New York, 7/6.

Cleveland Pig.—Business slow and prices barely steady at 34/6, f.o.b. shipping port, for No. 3 Middlesborough.

Bessemer Pig.—Only moderate business, but prices steady at 47/ for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

Ferromanganese.—Dealings moderate, but sellers quite firm in price. English 80 % quoted at £10. 15/, f.o.b. shipping port.

Steel Rails.—The market is dull and lower. Prices are named by some makers. Heavy sections quoted at £3. 15/, f.o.b. shipping port.

Steel Slabs.—Very quiet market and prices weak but "nominally" unchanged. Bessemer quoted at £4, f.o.b. at shipping point.

Steel Billets.—Makers ask former prices, but business is slow and the demand moderate. Bessemer, 2½ x 2½ inches. quoted at £4. 2/6, f.o.b. shipping point.

Steel Blooms.—Market dull and unchanged. Makers quote £4 for 7 x 7, f.o.b. shipping point.

Old Iron Rails.—Demand moderate, and prices in buyers' favor. Tees quoted at £2. 7/6 and Double Heads at £2. 7/6 @ £2. 10/, f.o.b.

Scrap Iron.—A moderate business, and prices barely steady. Heavy Wrought Iron quoted at £2, f.o.b.

Crop Ends.—Little doing and prices unchanged. Bessemer quoted at £2. 7/6 @ £2. 10/, f.o.b.

Manufactured Iron.—The market remains very quiet, and prices are easy, but without radical change. We quote, f.o.b. Liverpool:

Staff. Ordinary Marked Bars	£ s. d.	£ s. d.
Common	8 0 0 @	6 7 6
Staff. Bl'k Sheet, singles	7 7 6 @	7 10 0
Welsh Bars (f.o.b. Wales)	5 7 6 @	5 10 0

Tin Plate.—Fair demand at the close and prices steady. We quote, f.o.b. Liverpool:

TC Charcoal, Alloway grade	13/3 @ 13/9
TC Bessemer Steel, Coke finish	12/0 @ 12/3
TC Siemens	12/3 @ 12/6
TC Coke, R. V. grade 14 x 20	12/0 @
Charcoal Terns, Dean grade	13/6 @ 14/

Pig Tin.—Market firm at the close, but quiet. Straits quoted at £94. 7/6 for spot and £90. 15/ for three months' futures.

Copper.—Market closes quiet but steady. Merchant Bars quoted at £44. 15/, spot, and £45. 2/6, three months' futures. Best selected, £49. 5/.

Lead.—The demand is moderate, but prices are steady at £9. 15/ for Soft Spanish.

Spelter.—Demand fair and prices steady at £17. 15/ for ordinary Silesian.

The German Iron Trade.

(One mark per metric ton is equivalent to 24.8 cents per gross ton.)

DUSSELDORF, March 30, 1893.

For about nine years the furnacemen of the Rhenish Provinces in Westphalia have made efforts to secure a lowering of the rates of freights on Ore and Limestone. News has just reached us from Berlin that these efforts have met with success, and that the rates of freight both on Minette Ores from the Luxembourg-Lorraine district and the rates of freight on Coke from the Ruhr district to Luxembourg-Lorraine will be lowered. This is equivalent to cheapening the cost of Pig Iron in the Rhenish Provinces of Westphalia by about 4 marks per ton and in the Luxembourg-Lorraine district by 0 45 mark.

The indications of an improvement in the demand noted during the past few weeks seems to have ceased, and buyers are now maintaining a waiting attitude. A majority of the works are able, however, to quietly wait developments for some time, because they have entered large contracts, chiefly for Pig Iron.

The Rhenish Westphalia Rolling Mill Syndicate booked five times as many orders in January as in November last year, while the Upper Silesian Rolling Mill Association has increased its price by 5 marks. Quotations on Steel Ingots, Billets and Slabs are now about 5 marks above the lowest point. The price of Steel Billets is, however, as low as it has been. Sheets are a little firmer, but are still offered from the Segen district at very low figures.

The Association of German Enameling

Works has recently again advanced its price on Enameled Ware by 5 marks.

The production of Pig Iron in Germany and Luxembourg was 351,842 tons in February, including 120,237 tons of Mill Iron and Spiegel, 26,725 tons of Bessemer Pig, 156,662 tons of Thomas Pig and 48,218 tons of Foundry Irons.

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HARDWARE.

Condition of Trade.

TRADE continues in very gratifying volume, and there is a general activity throughout the country, manufacturers, jobbers and retailers doing a very satisfactory business. While there is an excellent demand for nearly all kinds of Hardware, there is a special activity in seasonable goods. Builders' Hardware is also moving in large quantities, with a good demand also for Heavy Hardware. In several lines there is difficulty in obtaining goods as fast as called for, and the market in some branches shows an improvement in tone, with slight advances in quotations. There is still some complaint in regard to collections. The outlook for future business is regarded as very gratifying.

The following report from Corbett, Failing & Robertson, Portland, Ore., was received too late for use in our last issue :

There is little or no change to report since our last. In some sections east of the Cascade range of mountains winter weather still holds on. In our immediate territory the roads are in very bad condition, as is usual during this month. Trade, considering these drawbacks, holds up fairly well, and the prospects are good for a fair season's business.

As reported heretofore, collections in some sections are almost out of the question.

Prices show but little change. Sisal Rope is $\frac{1}{2}$ cent per pound higher. The demand for Steel-Cut Nails seems to have been quickened by the adoption of the Wire-Nail card advances. In any event we are selling a larger proportion of them than before the change.

Chicago.

(By Telegraph.)

Jobbers have advanced Wire Cloth to \$1.50, as was foreshadowed last week ; it is now very scarce, as, despite the increased output by the factories, the demand has exceeded all anticipation and stocks here have been run off rapidly. The general demand for Hardware has greatly improved since our last report and jobbers are now very busy. Roofing Plates are in good demand. Heavy Hardware has improved as well as Shelf, and orders are large in every department.

St. Louis.

(By Telegraph.)

The volume of business shows a steady increase, particularly in the line of Shelf Hardware. There is also a heavy demand for Wire Netting and Screen Wire, and prices of both show a sharp advance. Barb Wire and Wire Nails are in good demand at unchanged prices. The Southern trade is very satisfactory, the demand

running largely to Farming tools and implements. The South is believed to be in better condition to-day than for several years past and the increased trade which is reported by local dealers tends to verify this belief. Shipments of Bicycles are very heavy and this branch of the Hardware business is being developed very rapidly. Collections are slow to improve.

Notes on Prices.

Cut Nails—Large quantities of Nails are moving, and in the matter of volume the market is in a very satisfactory condition. Prices are substantially as at our last report, the general quotation being \$1.20 for carload lots at mill, a figure which is, however, shaded in some cases under pressure. The new card is referred to almost uniformly as working satisfactorily and the understanding in regard to averages is well carried out. New York quotations are \$1.40 for carload lots on dock and \$1.60 from store.

Chicago, by Telegraph.—In Steel Cut Nails the situation is not satisfactory to manufacturers. Low offers are being made here by outside concerns that are again using Chicago as a dumping ground for accumulated stocks. The prices made to move such stocks are emergency prices and are not recognized in the trade as regular rates, which are continued at \$1.35 for usual deliveries, on customary terms. Jobbers quote \$1.50 for small lots from stock.

Wire Nails.—The Wire Nail market is in excellent condition with a large demand and firm tone. The advance in the card rate to \$1.55 f.o.b. at mill, with Cleveland as the point of equalization for the West and Pittsburgh for the East, is well maintained, with some possibility of a further advance in the near future. Small lots from store in New York are quoted at \$1.80 to \$1.85.

Chicago, by Telegraph.—Wire Nails are selling more freely from jobbers' stocks than from factory. Manufacturers are now busy shipping to jobbers on old orders, and the last advance may also have checked new business for the time being. The factory price is firm at \$1.67 Chicago, while small lots from stock are held at \$1.75, and carloads \$1.70.

Barb Wire.—There is a heavy demand for Barb Wire and shipments are with difficulty made by manufacturers as promptly as desired by their customers. The market in the matter of price has an excellent tone and the quotation of \$2.45 to \$2.50 for Four Point Galvanized in carload lots at mill is well maintained. In New York the price is \$2.65 to \$2.70 for carload lots on dock.

Chicago, by Telegraph.—A heavy trade is now in progress, and the height of the season has not yet been reached. Local manufacturers are making unusually

prompt shipments under the circumstances, having had very heavy stocks in their warehouses when trade opened, which enabled them to keep up with the demands on them. Should trade continue to increase, they will also fall behind with their colleagues in other sections. Prices are firm but unchanged at \$2.20 for Painted and \$2.60 for Galvanized from factory and 10 cents per 100 advance from store.

Star Butcher Saw.—In the advertisement of the Millers Falls Company, 93 Reade street, New York, in our last issue the list printed on their Star Butcher Saw was an old one, having been superseded about a year ago by the present list, which we take pleasure in giving below :

Inch.....	14	16	18	20
Per dozen.....	\$11.00	12.00	13.00	14 00
Inch.....	22	24	26	
Per dozen.....	\$15.00	16.00	17.00	

The trade will please note the correction.

Holland's Hose Reel—This Reel was described in our last issue and is manufactured by the Hollands Mfg. Company, Erie, Pa. It is sold at \$4 f.o.b. Erie, subject to a discount of 30 per cent.

Bright Wire Goods.—The market continues in substantially the same condition as noted last week, but there are indications of a reaction from some of the low prices quoted by some of the manufacturers, a few of the extreme prices having been withdrawn.

Bolts.—The condition of the Bolt market on the whole is more satisfactory than for some time past. The manufacturers, as a rule, are very full of orders, and in several lines are unable to turn out goods as promptly as desired by their customers, some of whom experience considerable difficulty in getting enough to meet their requirements. Prices in some lines, such as Common Carriage Bolts and Machine Bolts, are firmer although not quotably higher. Notwithstanding the fact that the market is an open one, it is regarded as in better condition than for a long time.

Blocks.—The Block market continues demoralized. Manufacturers are apparently vying with one another to see who can name the lowest prices, notwithstanding the fact, which is generally conceded, that at current quotations Blocks are selling below cost.

Rope.—In sympathy with the condition of the Hemp market prices for Manila and Sisal Rope are slightly lower, notwithstanding the fact that no formal announcement has been made by the manufacturers. The market for round lots is represented by the following base prices, f.o.b., New York, which are subject only to a discount of $1\frac{1}{2}$ per cent. for cash :

	Per pound.
	Cents.
Manila.....	8 $\frac{1}{2}$ to 9
Sisal.....	7 $\frac{1}{2}$ to 7 $\frac{3}{4}$
New Zealand.....	6 $\frac{1}{2}$ to 7

Export Notes.

THE EUROPEAN BUSINESS of Flint & Co., exporters, in this city, has been taken over by J. C. Plimpton & Co., with headquarters at 105-107 Queen Victoria street, London, E. C., although the latter concern's warehouse, at 65-67 Victoria street, Liverpool, will be retained. This enterprise was organized last summer by S. Levy-Lawson, who in the fall associated J. C. Plimpton with him. Mr. Lawson is still in this country on matters connected with this business, having arrived late in December. Mr. Plimpton is an American, well known in the trade, having been in England for about 14 years introducing American manufactures. Flint & Co. are energetically directing the attention of producers in this country to European markets through these channels, and refer to the fact that orders are steadily increasing. They look forward to a considerable trade in that direction. A recent order for 24 dozen Disston's Hand Saws, executed on account of the Liverpool house, while not considered a large one, is certainly significant as showing that having long since supplanted the Spear & Jackson (Sheffield) brand in this country, they propose to contest the home market of these well-known makers, who are still in the field there, as well as large exporters to various foreign markets. Among the lines of goods going forward are Hardware, Machinery, Agricultural Implements, House Furnishing Goods, Wringers, Wooden Ware, Lamps, Clocks, Furniture, Carriages, &c.

Uzal Cory & Co., 210 Water street, New York, manufacturers of Heating Apparatus, forwarded to Belfast, Ireland, via Liverpool, by the Cunarder "Servia," last Saturday, nine cases containing an Excelsior Gas-Tight Furnace, with pipes, registers and working plans, to enable foreign workmen to properly set it. This is intended for Kilwaughter Castle, recently inherited by J. Galt Smith, who divides his time about equally between New York and this residence, located at Larne, about 18 miles north of Belfast, on Larne Lough, an arm of the North Channel. This structure two or three centuries ago was used as a monastery. The Furnace is merely intended to supplement the existing heating facilities, which consist of open fire places in the different rooms. The same firm are also executing an order for a similar Furnace, with pipes, registers, &c., but of a smaller pattern, for W. R. Faries, M. D., shipped to Wei Hein, Chefoo, Northern China, some distance above Peking. This is intended to heat an ordinary ten-room residence recently built.

The Inter-Continental Railway Commission through their executive committee have issued a preliminary report, which is just from the preliminary printing office. This committee consists of A. J. Cassatt, president of the Commission, long identified with the Pennsylvania railroad; C. F. Parraga, Commissioner for United States of Colombia, of Parraga Bros., 58 William street, N. Y., exporters,

and three representatives acting for Ecuador and Peru, Venezuela and Paraguay. This pamphlet containing 45 pages and five good size maps, sketches briefly what has been accomplished in the way of surveys, &c., by Corps No. 1, in Central America and Corps Nos. 2 and 3 in South America, toward building a railroad connecting with the systems of the United States and Mexico at Ayutla on the frontiers of Guatemala and Mexico, and running through the Central American States, Panama Isthmus and United States of Colombia, Ecuador, Peru, Bolivia and Argentine Republic, with branches into Venezuela and Brazil.

W. R. Grace & Co., 1 & 2 Hanover Square, New York, announce the steamer "Endsleigh," 2366 tons, of their regular line for Pacific coast ports, including Talcahuano, Valparaiso, Antofagasta, Iquique, Mollendo and Callao, for dispatch about April 15 from covered pier 18 East river. Through bills of lading for other west coast ports will be issued on application.

It is reported from Montreal that a new steamship line is about to be established between Vancouver, British Columbia, and Sydney, New South Wales, to connect with the Canadian Pacific Railroad. The Canadian Government, it is stated, has granted a subsidy of \$125,000 a year for two steamers. Two new steamers, the "Warimo" and "Miawera," each 3300 tons, the property of Meddard, Parker & Co. of Sydney, are named as the vessels which will inaugurate the service, one of which is expected to leave Sydney May 10, stopping one day at Honolulu, arriving at Vancouver about June 1.

Advices from the States of Chihuahua and Sonora, Mexico, say that the prolonged drought in parts of these States is causing much suffering, resulting in a water famine, the failure of crops and death of cattle in large numbers. Some of the smaller streams are said to have dried up entirely.

The steamer "Finance" of the United States & Brazil Mail Steamship Line was lately sold at Newport News for \$88,000 to E. H. Ludlow & Co. of New York. The same firm a short time before in New York acquired the "Allianca" for \$83,000; the "Vigilancia" at \$81,000 and "Advance" for \$91,000. These vessels, it is rumored, have been bought in for the account of C. P. Huntington, vice-president of the steamship company.

The steamer "Ardanmhor" of Norton's Line, direct for Montevideo, Buenos Ayres and Rosario, will get away soon after the middle of April, and the "Lamington" is announced to sail the latter part of this month, enough cargo being engaged to fill both steamers.

An enterprise is being put on foot to irrigate the valley of the Rio Grande River between Matamoras and Camargo, a distance of 150 miles, which, if successful, is expected to open up 1,000,000 acres of rich land to cultivation. The Mexican Government has granted a concession to

irrigate that section of country by means of water to be taken from the San Juan River. Government engineers have declared the project feasible.

F. L. Morris of Sheffield, England, and two associates are now in Mexico, said to represent an English Iron and Steel syndicate with considerable capital, which is seeking to obtain control of many iron industries in that country. They are reported to have secured options on several important properties.

Advices from Ottawa, Ontario, state that the Canadian Minister of Trade and Commerce has received a dispatch from the British Government, stating that the Spanish authorities have decided that the direct trade between the Spanish Antilles and Canada is now on the same basis as between these colonies and the United States. It is not said whether this applies to the import as well as export trade, or whether Cuba is included in the arrangement.

H. P. Barber of Auckland, New Zealand, is now in New York on a business trip, having arrived at San Francisco on the steamer "Alameda" March 16. He will remain here but two weeks longer and return by the same route. He is a general commission merchant, exporting Kauri Gum largely to this country, a crude material used extensively by varnish makers. He also imports such staples as Lime, Resin, Plaster, &c., being also the resident agent at Auckland of Mailler & Quereau, 51 Stone street, this city, proprietors of the Kangaroo Line of sailing ships for Australian and New Zealand ports. Although an American, he has spent some 30 years in the colonies. Asked about the condition of business there he remarked that the country was in quite a satisfactory condition, being much better off than Australia. Reference was made to the famous sand on the west of North Island, especially from Manukau Heads, south to Taranaki Point, a distance of about 120 miles following the coast line. This sand is said to contain from 85 to 90 per cent. of iron. It has been worked at intervals for upward of 30 years, the difficulty, however, being to get a proper flux for it. He estimated that something like £100,000 sterling had been sunk experimenting with it. One man who had succeeded in doing better than his predecessors became involved in a shooting affair, and was sent to jail for 14 years, taking his secret with him. In connection with the terrible floods at Brisbane about February 4—he having sailed the 25th of the same month—he thought the estimated loss of £3,000,000 sterling was inside the actual amount. He said 33 inches of rain fell in 72 hours. The traffic in Kauri Gum has reached large proportions, amounting now to about 5000 tons a year. This is brought to the United States mainly by vessels consigned to Arnold, Cheney & Co., 158 Water street, New York. The gum is supposed to be a deposit from forests that disappeared ages ago, as it is now dug out of the ground, being found in lumps sometimes at a depth of 5 feet. It

is a sap from the kauri tree (still in existence), the gum being found principally between Auckland and the North Capes, a distance of about 300 miles. Other gums for this purpose are obtained elsewhere, but contain more or less acids, from which this is free. In the crude state a fair price is equivalent to 12 cents a pound there. Men who cannot find more profitable employment in other channels go to a storekeeper who fits them out with an equipment, including a spear for locating the deposit, an instrument to dig it with, a tent, cooking utensils, &c., which are paid for in consignments of gum sold to the teamsters, who travel back and forth carrying provisions up and returning with gum.

Arkell & Douglas, 95-97 Broad street, New York, have extended the operations of the Merchants' Line, for which they have long been agents, to Australian ports. This line they say has been in existence upward of 40 years, but during the late active competition for Australian freights ceased to do Australian business, although the line was in operation to the South African colonies. They now have boats loading at their own pier, 11 East river, as follows: Bark "Mentone" for Adelaide; American bark "Exporter" for Melbourne; the iron bark "Varuna" for Sydney and Newcastle and the iron bark "Halmaker" for Brisbane. By the two latter boats through bills of lading will be given for the northern ports, Rockhampton, Maryborough, Townsville, &c.

A representative of an old established export house in Water street of this city, in commenting on the amount of business that naturally should accrue to this country, but as a matter of fact goes to Europe, mentioned an incident a day or two ago in support of this statement. A merchant doing business in Durango, Mex., was recently in this city with a memorandum book of wants containing upward of 100 pages. Our informant spent three days piloting the buyer about among manufacturers, resulting in about three pages of orders being left here, while the balance was taken by him to Europe, to be left mainly in Germany and France. The explanation given was partly the seeming indifference of manufacturers, lower prices and freights and longer credits abroad, while the market and its requirements received closer attention among the foreigners who strove harder to supply what the buyer required.

W. W. PRYOR & Co. have recently commenced business at 81 Chambers street, New York, as manufacturers' agents and jobbers in Hardware and House Furnishing Goods and specialties. W. W. Pryor has for some years been connected with the Metropolitan Hardware Company, of which his father, R. W. Pryor, was the head, their business being at 32 Vesey and 26 Barclay streets. For a portion of his time with that house he served them as buyer. One of the features of the new concern will be to secure buying agencies for Hardware houses out of town who may be desirous of having a resident agent here. Another will be to purchase goods from manufacturers who are overstocked and wish to unload goods for cash, without disturbing the channels of their regular trade.

After Mexican Trade.

By WM. H. MAHER, TOLEDO, OHIO.

VI.—Puebla.

THE RIDE from the City of Mexico to Puebla was one of about six hours, and through the most picturesque part of Mexico. I noticed that our cars were built at St. Charles, Mo., and our locomotive was from the Baldwin works. Puebla is a thrifty, enterprising manufacturing and jobbing city. It is the third in importance in the Republic, with a population stated variously at from 70,000 to 85,000.

There are several cotton factories in the city, and onyx mines are in the vicinity. The retail trade is large, for the surrounding country is well cultivated, and rich haciendas are the attractive feature of the landscape.

Few cities can show a finer stock of Hardware than that kept by one large house in this place, and purchases are made in such quantities as would gladden the heart of the Northern salesman.

It was my good fortune to meet an American Hardware salesman in Puebla who has been representing his house in Mexico for over three years, and from him I gained information about the goods in his line that are handled by Mexican merchants.

First, the custom is to sell on four to six months' time, and I was assured that Mexican merchants were as good pay as were those in the States. Statements were sent if bills were not remitted for, and these met with attention.

This gentleman sells no cutlery; he said he used to sell low-priced German goods before the McKinley bill was passed. Had taken a few orders for Knives and shipped them direct from Germany; but the German manufacturers were looking after this trade for themselves now.

American railroad men, however, wanted American Knives, and hence there was some trade in this way that was probably picked up by St. Louis and Chicago houses.

In Table Knives he met Landers, Frary & Clark's goods the most frequently. The Collins Axe Company had about 99 per cent. of the Axe trade. Yale Locks were kept in every stock, but there was also a good demand for common Scandinavian Jail Locks; Drawer and Cabinet Locks were almost exclusively German.

He spoke of the increased trade in pressed ware, particularly in Galvanized Pails. It was no uncommon thing to see an order for 100 dozen; but he had seen one order for 100 dozen each 10, 12 and 14 quart Galvanized Pails.

American Stocks and Dies had control of the whole field.

Wire Nails were mostly German. Carriage Bolts and Wood Screws were from France. This was a surprising fact to me. I supposed the United States could give the world odds on such goods.

Mirrors are mostly from France; chairs from Austria. The old Planter's Hoe is the one used altogether, and that a German one. English Chain is sold almost entirely.

Rope is bought in the States, though the hemp and sisal are raised in Mexico and sent North.

In Carpenter Tools the following American goods are well known and handled by the larger houses: Disston's Saws, Stanley Iron Planes, Ohio Tool Company's Wood Planes, Stanley & Chapin's Rules, Levels and Try Squares. Steel Squares of American brands, Patent Braces, Chisels and Drawing Knives are all in demand.

In Shovels and Spades, Ames' goods were known, and a few carried in stock, but price was against them. Rowland's and similar grades had the preference. Mining Picks were generally from Pittsburgh.

All Saddlery Hardware seen in Mexico was from the States, and as the average Mexican takes a great deal of pride in his saddle and bridle, that country was an excellent market for this line.

In plated ware, the Meriden Britannia Company's hollow ware and Rogers & Bros.' flat ware had the lead among American goods, but English plated ware had by far the larger part of the trade.

In common Tinned-Iron and Steel Spoons none but American can be found in Mexico at present.

As to Bicycles, at first it appeared as if the Humber machine was to have the lead and the trade, but now American machines have gone to the front. The best wheel that is ordinarily bought costs \$63, in Chicago or New York. The duty on such a machine is \$8, and freight about \$4 to the coast. Retail price is \$175, but this is Mexican money and equivalent to but about \$115 in our money.

In Lamps the Rochester has the preference, but a very large trade is done in cheap goods. The duty on Lamps and the packing about them is very heavy. They are sold at fancy prices. A Rochester that retails at \$4.50 to \$5 in the United States sells for \$12 in Mexico. Common hand Lamps that retail at 75 cents in the States sell for \$3 in Mexico. American Lamp Chimneys are sold exclusively.

W. & S. Butcher have all the File trade. American File makers ought to note this.

There is a demand growing for American Paints. So far Longman & Martinez have about all the trade in that line.

In Fire Arms of course Belgian Guns have the whole market for common Guns, but American Rifles and Revolvers have a clear field in these branches.

No American Granite Iron Ware can compete with European prices, and consequently is not met with in Mexico.

Speaking of the liberal orders given by Mexican merchants he told me that the representative of a New York drug house—coarse drugs—took one order that amounted to \$42,000. And this was not an order for a full stock of goods, but a piecing-out order for the goods this house controlled.

In the matter of freights much friction was caused by strife between New York and Chicago for cut rates. I was told that last year New York had a rate by water of 50 cents to all Mexican points. This spring the rate is \$1.87, and Mexican merchants can get a lower rate from any European port. Mr. Myers told me he had carload rates from Canton, Ohio, to City of Mexico, \$1.37 per hundredweight. A merchant told me he paid \$2.46 on Chains from Chicago.

I met the Mexican agent of the Mosler & Bauman Safe Company. It seemed to me that if the duty on all goods was by gross weight, and that Chairs could hardly come into Mexico, an iron Safe would cost almost as much as diamonds. But the agent said he had a good trade there, only it took longer time to sell a Safe in Mexico than in the States.

A railroad man, listening to our talk about tools, said: "The Mexican mechanic catches on to new ideas quicker than the dealer thinks he does. Our railroad company determined to put up an American hotel and have the work done by American mechanics. But during the construction it was found necessary to employ a good many native workmen. These men saw the Americans use their various tools; they handled them, tried them and saw how much superior these were to their crude tools. They called for them at the dealers, and now a fine line of American Tools are kept in that town."

The salesman said in answer to this: "The dealers are opposed to the introduction of the best goods. As an instance, only this last week I was asked my price on a wide rubber belt. The dealer had a special order for one. I supposed he wanted the best made and quoted the company's first quality. But he brushed the figures aside and said the quicker the belt wore out the sooner he would sell another one to the same man. He ordered the cheapest belt in my book."

I asked the experienced traveling man what his expenses were in Mexico. He answered that they would average about \$15 per day.

He said he hated to see European goods in Mexico and did all he could to turn the trade up north in every line. And then he asked me to join him in a bottle of imported German beer, which he declared was the finest beer in the world!

(To be continued.)

Mule Carts for India.

AN OPPORTUNITY for the exercise of American inventive genius is afforded by the announcement in the English papers that the Secretary of State for India offers five prizes for designs and models of a metal transport cart for mule draft for the use of the British army in India. As the competition is announced to be open to all nations, and the prizes are of considerable amount—namely, £750, £500, £375, £250 and £125—it will be of interest to print the conditions as given by *The Engineer* of London. The instructions for competitors state that the object sought is a design for a military transport cart for a mountainous country, with absolutely no local resources in the way of skilled labor or constructive material. The few existing unmetaled roads are steep, narrow and rough. Carts would further be largely employed on unbridged and unmetaled tracks newly opened along hill sides and stony river beds to meet the exigencies of military operations. The roughest handling is unavoidable, and the cart must be adapted to withstand great extremes of temperature, varying from 185° F. to 15° F. The cart must be entirely made of

metal or of combinations of metals. As the merits of a design will be largely judged from its prime cost, competitors will consider how far light and strong, but possibly very expensive, metals should be used in place of commoner material, having especial regard to the importance, in the matter of durability, of the cart itself not being unduly light with reference to the load it has to carry. In this connection 656 English pounds as a maximum and 492 pounds as a minimum are indicated as generally suitable limits of weight for an empty cart. This remark, however, in no sense need restrict designers' ingenuity in devising a lighter cart if of sufficient strength. The cart is to have only two wheels, to be provided with a brake or drag, and to be drawn by two mules. The pole system of harnessing, adapted to animals 12.1 to 12.3 hands in height, is recommended. The most convenient height for the floor is from 2 feet 9 inches to 3 feet 3 inches; the extreme width is 4 feet 6 inches; outside diameter of wheel from 4 feet to 5 feet and width of tire 2½ inches to 3 inches. The packing space should measure 5 feet 6 inches by 3 feet 3 inches by 1 foot 9 inches. Each designer is to state in describing his cart whether he is willing to enter into a contract for its supply, and, if so, within what time and at what cost he is prepared to furnish a single specimen cart, 12 carts, 100 carts, or from 500 to 2000 carts, free on board in London or delivered in Calcutta, Bombay or Allahabad. The English language, although not obligatory, as German and French may be used, will necessarily have an advantage in the competition. English measures, weights and prices are alone admissible in the specifications, drawings and models.

It may be mentioned that the mule cart at present in use in India costs about 190 rupees, or \$68, roughly. Intending competitors wishing for the fullest details as to the kind of cart required will be supplied with further instructions on application to the Director General of Stores, India Office, Westminster, London, or to the Secretary of the Government of India, Military Department, Calcutta, British India. The designs and models, framed in needful detail, should be sent direct to the Secretary to the Government of India, Military Department, Calcutta. No designs or models reaching Calcutta later than September 30, 1893, will be allowed to compete. The time required for postal communication between New York and Calcutta may be taken as one month.

Van Wagoner & Williams Company.

THE LARGE INCREASE in the business of Van Wagoner & Williams Company since they moved to Cleveland has made it necessary for them to increase their capital, and at a recent meeting of their directors it was voted to issue \$150,000 worth of preferred cumulative stock bearing 8 per cent. dividends, payable quarterly. It has not been

deemed necessary to issue any prospectus relating to this matter, as the stock is being largely taken by those already interested. In connection with the removal to Cleveland the company have erected a large and exceptionally complete plant, which is, we are advised, in full and satisfactory operation, with a large increase on their former business.

The Hon. W. J. Coombs on Export Trade.

WHILE recently discussing the present condition of the export trade, the Hon. W. J. Coombs, president of the Coombs, Crosby & Eddy Company, remarked, while speaking of their own experience, that it was mainly in a satisfactory condition. Being asked for facts, he stated that their policy for many years had been to cultivate commercial relations with all quarters of the globe, so that when one or more sections were suffering from depression others not similarly affected would still supply profitable business. Their business was started in 1857, a copartnership being formed in 1870, which has been renewed a number of times. To facilitate the transaction of business in many ways and avoid complications liable to ensue under the old method it was decided to incorporate this interest, which was done in January, 1892. The older clerks, identified with the firm for many years and filling responsible positions, were given an interest, having been fitted by education and experience to assume executive positions should for any reason the present leaders retire. The company were capitalized at \$1,500,000, divided equally into preferred and common stock. In settling up the year's business of 1892 (nominally 12 months' transactions, but really only nine months', owing to delays incident to the change), 8 per cent. was paid on the preferred stock. From the remaining profits one-fifth was set aside as required by the by-laws as a permanent reserve, and a sufficient sum reserved for unliquidated accounts. Out of the remainder a 4 per cent. dividend on \$750,000 of common stock was paid. Many thousands of dollars were spent in excess of the customary outlay for salesmen's traveling expenses in extending and cementing the new relations. At the beginning of the current calendar year the company's books showed \$450,000 worth of good unexecuted orders, the expense of obtaining which had already been charged to the past year's transactions. The plan of conducting this new enterprise has always been to bring manufacturer and foreign buyer in as close contact as possible, quite in contrast with the policy of many export managers. Their argument has been that their methods being well known and their facilities such that they are enabled to execute orders on a small margin, it is more to the foreigner's interest to purchase through them than direct, considering the details of freights, packing, shipping and all the etceteras of commercial transactions.

Forty of the new wire-wound 6-inch rifled guns have been manufactured for the British navy. The weapon is 40 calibers long and weighs 7 tons.

Arrangement of Stores.

THE ACCOMPANYING ILLUSTRATIONS relate to the Hardware establishment of Dayton & Hall, First and Taylor streets, Portland, Ore. The building is of brick and iron, 26 feet front

street being on the side, thus giving large show windows and fine receiving and shipping facilities. On the Taylor street side is a wooden awning supported by brackets, extending along the rear portion of the building over the wide sidewalk, affording protection for goods temporarily outside the store.

In front of the store at the curb is a Padlock sign, mounted at right angles to the store, on a handsome iron post, the lock being almost an exact copy of the No. 8454 Yale. The post is the Mott Iron Works' No. 39 and is 9½ feet high, finished in maroon and gold. The Padlock is of galvanized iron, 3 feet wide and 4 feet high. The Lock was first painted with red lead and then with two coats of paint, giving it a dead black rustless finish. The name Dayton & Hall, in porcelain letters, 4 inches high, is on both sides of the shackle of the Lock, and the word Hardware is cut out of the body of the Lock with porcelain letters placed back of the galvanized iron. The edges of the Lock and the half balls on the body are covered with gold leaf, the whole Lock being made and finished in the best manner possible. The Lock and post are conspicuous and the firm think an excellent advertisement. The Lock at night is illuminated by electricity, bringing out the word Hardware quite prominently.

From Fig. 771 it will be seen that the store is supplied with basement heater, cash carriers, wall and show cases, Shot, Screw and Bolt cases, bins, dumb waiters, elevators, dormant scale, general and private offices, type-writing machine, shipping desk, washroom, closets, &c. At about two-thirds of the depth of the building partitions run part way across the store dividing the room into two parts—the store proper and the shipping room, where also larger and heavier goods are kept. Fig. 772 shows the gallery, which is suspended from the ceiling of the first floor and reached by the stairway to the second story. This largely increases the capacity of the store; its construction is shown in Fig. 773. On the gallery over the first floor offices are a builder's Hardware sample room and an office.

In the wallcases on the right of the entrance on the main floor are kept stock and samples of fine Tools, novelties and new goods in the Tool line. In the corresponding cases on the opposite side are samples of split bamboo and fine Rods, Telegraph Instruments, Electrical Goods, Dog Collars and other showy articles. On each side of the store, in front of the shelving, are double showcases, one of which is shown in Fig. 773, which are a novel feature, and not only add to the appearance of the room but increase the space for displaying fine goods. In the upper part of the double case, at the right of the entrance, 200 styles of Pocket Knives are kept, while below is a fine display of Builders' Hardware. In the opposite case, the one shown in Fig. 773, the upper part is devoted, in season, to Fishing Tackle, or Cutlery, Novelties, &c., and the lower part to fine Carvers and various attractive goods. Changes are made in the goods and arrangement of these cases from time to time.

The shelving under the gallery on both sides of the store is filled to a convenient height with wood shelf boxes, sampled, and the two upper shelves are utilized for stock in original packages. On the right-hand side of the store Tools and Builders'

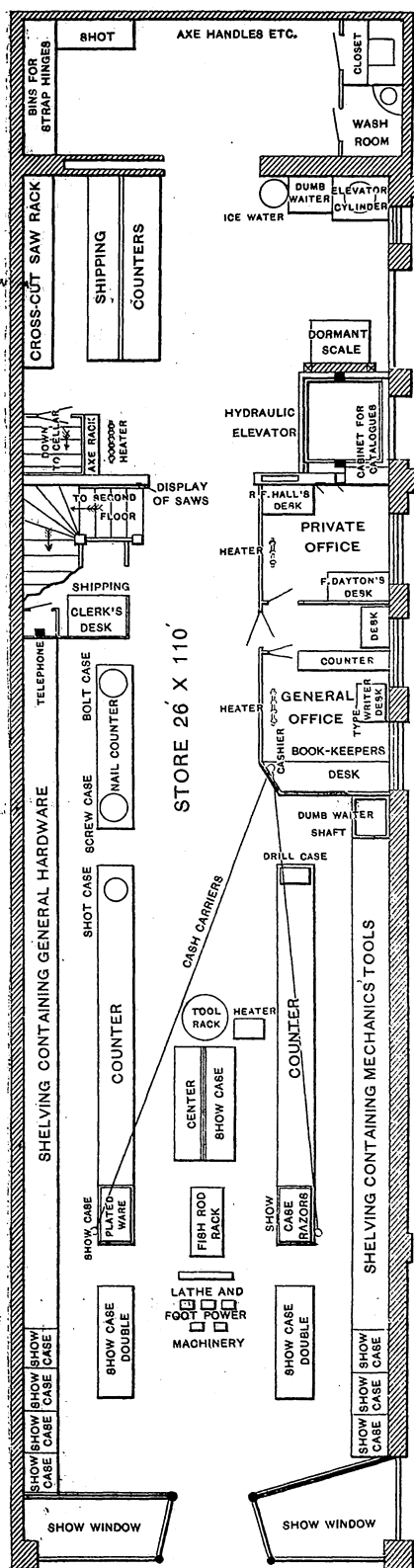


Fig. 771.—Plan of Main Floor.

by 110 feet deep, of which the basement, first, second and third floors are required for the business. The building is handsomely fitted up, with modern improvements, among which electrical appliances are used to a great extent. The building fronts on First street, Taylor

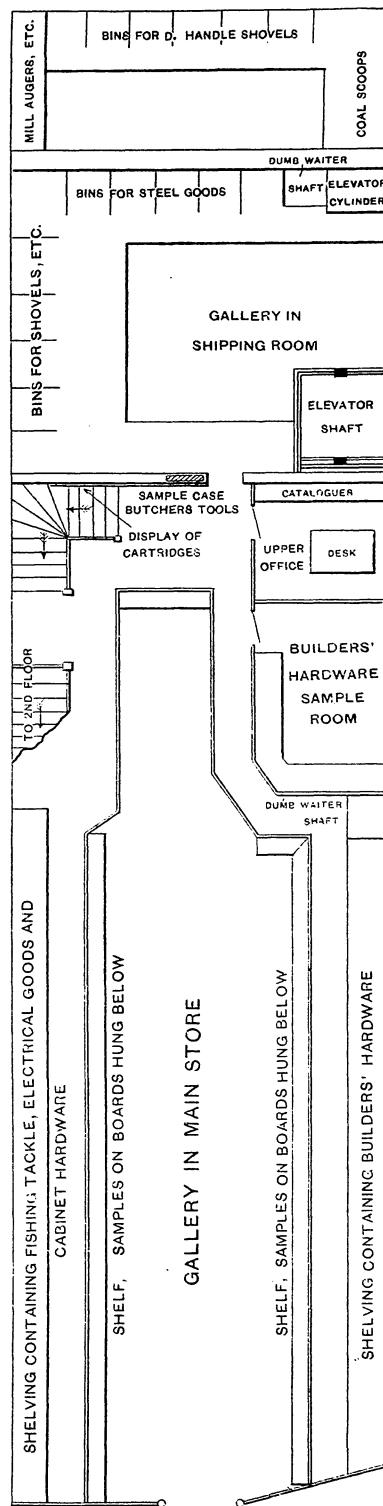


Fig. 772.—Gallery in Main Store.

Hardware are kept, most of the stock of Builders' Hardware, however, being above the gallery. On the opposite side is kept the retail stock of Fishing Tackle, House-Furnishing Goods, Electrical Goods, Cabinet Makers' Supplies, &c. Above the gallery on this side is the larger stock of these goods. Goods are sold both from below and above the gallery, and the gallery shelf is used as a counter for putting goods on. A view of this shelf and the manner in which the under part is utilized for hanging sample boards, is given

in Fig. 774. Samples of Saws are displayed on the front of the partition at the stairway leading to the second story.

The Fishing Rod Rack shown in Fig. 775 during this season stands in the center of the main floor between the double show cases. The legs are of $1\frac{1}{4} \times 1\frac{1}{8}$ stuff, beaded, with two shelves

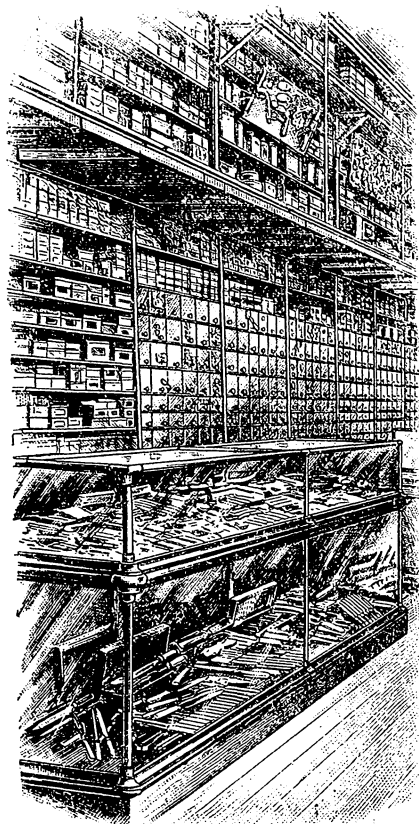


Fig. 773.—Showcase, Shelving and Gallery.

2 x 4 feet, held in place by shelf brackets. The top shelf has beaded edges, the whole being finished in natural wood. The top shelf has 38 holes $1\frac{1}{2}$ inches in diameter, and the lower shelf has a cor-

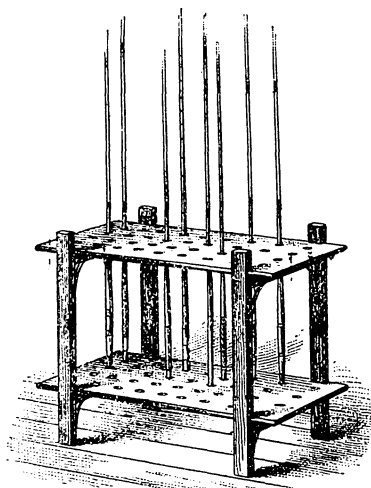


Fig. 775.—Fishing-Rod Rack.

responding number of holes, bored only part way through. This displays a quantity of rods to good advantage in a comparatively small space.

Fig. 776 illustrates a fine show counter recently made for the first floor, on which samples are displayed. The lower part of the counter is 9 feet long and 3 feet high, made of spruce; the top of $\frac{3}{8}$ inch

oak, with red wood molding immediately under the top. The front of the partitions are beaded, and the shelves are adjustable. Three-quarter inch gas pipe rests on the top and supports the shelf above,

Rope, Grindstone Fixtures, Sash Weights and like heavy goods. A portion of the basement at the rear of the building extends under the sidewalk. Elevator and dumb waiter run from the basement to

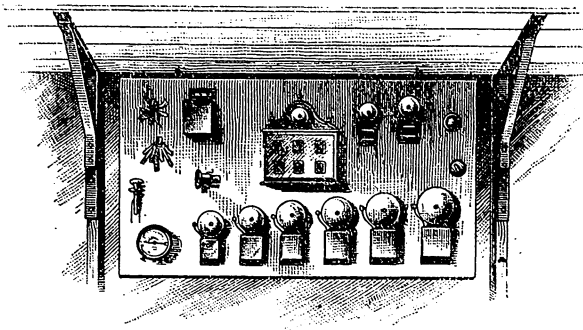


Fig. 774.—Gallery Shelf and Sample Board.

which is of oak 18 inches wide. Above this is another oak shelf 9 inches wide, supported on $\frac{1}{2}$ -inch gas pipe uprights. The iron work was furnished by the firm, and the finish moldings, &c., were made to correspond with the shelving, and varnished, oiled, stained, and painted to correspond with the other wood work in the store. The counter was finished in the best possible manner at a cost of \$38.

The store is lighted by incandescent lamps, and the clock in the office is self wound by electricity. A complete burglar alarm consists of a large Electric Bell located in the front of the basement, connecting the doors, windows, show-

the other stories. The basement is provided with a sink and the second floor with washroom and closet.

On the second floor is shelving for wholesale stock of general Hardware, Miscellaneous Tools, Cartridges, Wire Brads in papers, wood ornaments, &c. There are also sample counters of Meat Cutters, Coffee Mills, Apple Parers, Scales, Vises, Weather Vanes, and a counter with bins below for Lag Screws, Machine Bolts, Washers, &c. Samples of foot-power machinery are shown on this floor. Clothes Wringers in cases, and cases of Axes, both handled and unhandled, are stored near the elevator.

The front portion of the third floor is occupied as a storeroom for goods in cases, cased machinery, Electric Batteries, Apple Parers, &c. The rear part of this floor has upper and lower bins for the wholesale stock of Shovels and Steel goods. Cases of Cross-cut Saws and Wheelbarrows knocked down are also kept here.

Trade Items.

THE ORR & LOCKETT HARDWARE COMPANY have this year surpassed their record of last season, having secured the contracts for ten of the "skyscrapers" for which Chicago has become noted. This includes, with two minor exceptions, every office building contract let this season. The following is the list: The Columbus Memorial Building, the Marshall Field Building, the Isabella Building, the Wachusett Building, the Katahdin Building, the Ellsworth Building, the New Era Building, the Hartford Building, the Kedzie Building, the Abel Building. Exclusive of numerous strictly World's Fair hotels, they have also been awarded contracts for the Congress Hotel, at which President Cleveland will stop during the World's Fair inaugural ceremonies; the Windermere Hotel, the Imperial Hotel, the Lakota Hotel and the Hampden Hotel. They were also successful in securing the contracts for the Chicago Athletic Association, the finest and largest club building in the city; the Chicago Club and the Art Institute. Their latest large contract was for the new Illinois Central Railroad station. For eight of these magnificent buildings they will supply Hardware of special designs, that, it is needless to say, will be as well made, as beautifully finished and as properly selected as is all the work that passes through the hands of this well-known company. After 15 years' occupancy of their present location they will, on May 1, remove to their new stores, 50 State street and 71 Randolph street, where, with ample room and largely increased facili-

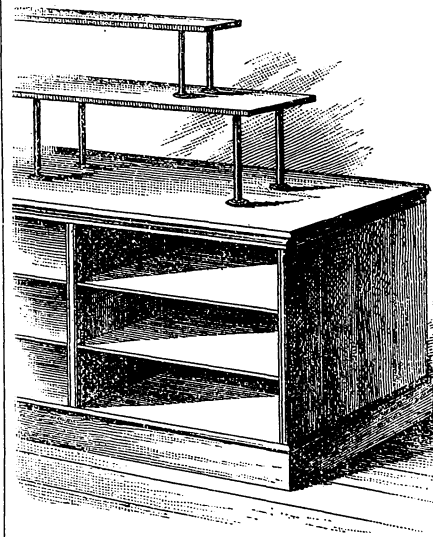


Fig. 776.—Show Counter.

cases, safe, &c., the circuit of which is closed automatically by an electric clock from 11 o'clock p.m. to 6 o'clock a.m. The bell when ringing can be heard by their private watchman a distance of four squares from the building. Electric bells and speaking tubes connect the offices with each floor. The electric lamp at the shipper's desk is controlled by a floor push, while the electric lamp in the telephone closet lights automatically upon entering. The light in the padlock sign, together with those in the show windows and in the store, are under the control of the watchman.

The basement is used for keeping Wire and Steel Nail, Chain, Grindstones,

ties, they will be in better position than ever to supply the wants of their rapidly growing trade.

JOHN P. LOVELL ARMS COMPANY, Boston, Mass., are putting on the market Small's Fire Escape, which is described as being self-regulating and reversible acting. It is made of rolled pressed steel, nickel plated, and weighs, without the rope, 7 ounces, and is warranted to hold 1000 pounds. One or two persons may use it at a time. The device consists of a hook to be firmly screwed into the wood-work inside the room. To this is attached best quality rope of sufficient length to reach the ground. The rope is run through a V-shaped piece of metal to which is molded a ring through which a strong band is passed. This band is placed over the head and under the arms and forms a perfect sling in which a person may descend and at the same time have both hands free to grasp the V-shaped pulley and regulate with ease and surety the speed of his descent.

WE ARE ADVISED by Butts & Ordway, Boston, Mass., that they are now the sole sales agents for the Larabee Roller Wear Iron, and that they will manufacture them with their other specialties. They state that the Wear Iron is already well and favorably known, and that they shall push it with the other articles they make.

DIETHER & BARROWS, Fort Wayne, Ind., have engaged C. M. Avery, who is widely known to the trade, as their direct representative. They advise us that at the present time they are in receipt of liberally increased orders for their Weiss Washing Machine, and that usual orders for their line of standard patterns are given prompt attention. They are now building extensions to their new factory, which they state will enable them to insure prompt deliveries.

IN ANNOUNCING the prize winners in Prize Competition No. 5, in our last issue, it was stated that the first prize had been awarded to H. S. Drummond of Newark, N. J. Mr. Drummond's middle initial is, however, G. and not S as printed.

Prize Competitions

\$25.00.

Prize Competition No. 20.

SUBJECT :

A Reliable System for Securing the Correct Charging of All Goods Sold on Credit.

The adoption of cash sale tickets, cash carriers, cash registers, &c., has provided for the strict accounting of cash sales. As credit is almost universally given to a greater or less extent in connection with cash, it is necessary that goods thus sold should not leave the store without being properly charged. The object of this competition is to draw out practical suggestions or descriptions of systems in use whereby the charging of all goods is insured. The subject touches also the following points: How to avoid charging undesirable parties without giving offense, and how to avoid charging small amounts.

This competition will remain open until May 6, 1893.

Those intending to compete are reminded that it will not be necessary to write long essays, but that comparatively brief and business-like answers will be

favorably regarded as meeting the purpose for which these competitions are announced.

The following prizes will be awarded :

First prize	\$12.50
Second prize	7.50
Third prize	5.00

The prizes will be awarded for answers which in the judgment of the committee of award are most suitable for publication and of the most general interest. We reserve the privilege of extending the time on any competition in case the contributions received are not of sufficient number or merit for the committee to award prizes. These competitions are open to every one, and it is hoped that there will be a general response from business men. We shall have the privilege of publishing any or all of the contributions received.

Replies are to be received not later than May 6, 1893. They should be addressed as follows :

DAVID WILLIAMS,

96-102 Reade street,

New York.

Prize Competition No. 20.

The committee to whom the contributions in Prize Competition No. 6 were referred have awarded the prizes as follows:

First Prize of \$50 to FERDINAND TUSCH, Brooklyn, N. Y.

Second Prize of \$25 to JAMES D. RICHARDS, Covington, Ky.

Third Prize of \$15 to M. STRANSKY, New York, N. Y.

Fourth Prize of \$10 to F. F. GILMORE, Louisville, Ky.

Other Competitions which have closed are now in the hands of the Committees of Award, who are giving careful attention to the claims of the different contributions. From the number of these and the evident merit of not a few of them, we are assured that a great deal of valuable information and suggestion will be put at the disposal of the trade.

The Weekly Prize Competitions noted below are now before our readers and remain open until the dates named:

No. 17. Closing April 15.

How Merchants Should Treat Traveling Salesmen.

No. 18. Closing April 22.

The Extent to Which Merchants Should Devote Their Attention to Outside Interests.

No. 19. Closing April 29.

Electrical Goods as a part of a Hardware Stock.

No. 20. Closing May 6.

A Reliable System for Securing the Correct Charging of All Goods Sold on Credit.

Another subject will be announced in our next issue.

The Bridgeport Gun Implement Company, 313 and 315 Broadway, New York, advise us that they are in a position to manufacture Bicycle Sundries of every description. They will be glad to negotiate with any one for the manufacture of patented articles in this line.

Bicycles.

ROUSE, HAZARD & CO., Peoria, Ill., issue an 1893 catalogue, in which are shown views of their factory, offices, salesrooms, repair shops, &c., also some 30 illustrations of Wheels which they carry in stock. The company manufacture the Sylph, Rudge and Overland cycles and handle a line of representative Wheels of other makers. A speciality is made of bargain Wheels, of which it is stated they have \$125,000 worth to select from and of which a special bargain list is issued. A large line of Bicycle sundries is shown in connection with their regular machines. The company advise us that the demand for Cycles this season is much larger than ever before, and also a large number of requests for catalogues.

The 1893 catalogue of Bigelow & Dowse, 229 Franklin street, Boston, Mass., show illustrations of Sunol Light Roadster, Lady's Sunol, Triangle Full Roadster, Royal Special Roadster, Hercules, Stella, Cinderella and Whirlwind. A line of Lanterns and sundries is also shown.

Manufacturing.

AMONG the shipments of the Parr Register & Mfg. Company, 96 to 100 Georgia street, Buffalo, N. Y., during March were two carloads of Registers to St. Louis, one carload to Kansas City and two carloads to Chicago.

The Ludlow-Saylor Wire Company, St. Louis, Mo., report a brisk trade in their Art Metal Department. They are now finishing an elevator inclosure for a local clothing concern. This inclosure is oxidized copper plated, of attractive design, and will be a work of art when completed. They also furnished to the same concern a quantity of nickel plated show window fixtures. They are also at work on an elevator inclosure of ornamental iron for the new High School building, St. Louis.

L. S. Starrett, Athol, Mass., has purchased a half interest in F. J. Gay's plant for manufacturing milling and forming Cutters, Providence, R. I. Mr. Gay was formerly superintendent of this branch of the business of the Brown & Sharpe Mfg. Company, and is referred to as understanding it thoroughly. Messrs. Starrett & Gay now have a plant worth about \$15,000 and are adding to it and endeavoring to make it as complete and efficient as possible. Mr. Starrett has just placed a contract for an addition to his present factory at Athol, which is to be 160 x 40 feet, three stories and basement. This will be completed during the coming summer, and as soon as ready the Cutter plant will be removed from Providence to occupy a part of the building. The manufacturers advise us that they do not intend to cut prices on this line of work, but will endeavor to gain a reputation for doing the best work, and by using the best grade of steel under improved methods of hardening will guarantee satisfaction in every respect. At present they are doing special work for a limited number of manufacturers requiring Cutters of a superior grade, while at the same time they are making the special tools to manufacture a full and complete line for the trade.

H. H. Fulton, president of the Eclipse Bicycle Company, Beaver Falls, Pa., has leased the upper floor in the building of the above concern and will at once fit it up with machinery for the manufacture of a Bicycle Saddle of which Mr. Fulton is patentee and sole owner. Mr. Fulton is now in the East purchasing the necessary machinery and will give employment to a number of skilled mechanics when the manufacture of his Saddle has been commenced.

Price-Lists, Circulars, &c.

C. SIDNEY SHEPARD & CO., 23 and 25 Randolph street, Chicago : Spring circular of seasonable and other goods. Comprises 38 broad pages of such articles as Water Coolers, Ice Cream Freezers, Ice Picks, Lemon Squeezers, Garden Trowels, Window Cleaners, Step Ladders, Oilers, Fly Traps, Wire Netting, Japanned Bathtubs, Cash and Bond Boxes, Flue Stoppers, Kettles, Sprinkling Pots, Oil Cans, Sauce Pots, Perfection Cake and Pie Tins, Steam Egg Poachers, Toasters, Dinner Pails, Oil Stoves, Gas Stoves, Tea Kettles, Bird Cages, Can Screws, Roofing Supplies, Porcelain Cereal and Fruit Cookers, together with numerous other goods in the company's special line of deep and shallow Stamped Ware. Attention is particularly called to the Buffalo Steam Egg Poachers, the Columbian Roasters and Bakers, the Shaker Flour Sifters and the Perfection Cake and Pie Tins. The firm have adopted a new policy in making no charge for boxing goods of their own manufacture.

THE KEYSTONE MFG. COMPANY, Buffalo, N. Y., call attention to the fact that No. 1 of their Nonpareil Ratchet Wrench and Combination is not only intended for iron and wood workers, &c., but that it is also a convenient and desirable tool for household use, having, it is stated, as a combination, all the advantages of distinct or separate tools, nothing being sacrificed for sake of combination.

LOGAN, GREGG & Co., Pittsburgh, Pa.: Spring Catalogue 1893. Illustrations include Garden Tools, Lawn Mowers, Grass Catcher, Scythes, Grain Cradles, Hay Carriers, Hay Forks, Scythe Stones, Sheep Shears, Churns, Barrows, Pruners, Shovels, Step Ladders, Screen Doors and Windows, Filters, Water Coolers, Refrigerators, Washing Machines, Bicycles, &c.

BUTTS & ORDDAY, Boston, Mass.: Heavy Hardware. Their 1893 supplement No. 1 to catalogue No. 3, 1891, contains illustrations and prices of Sure Grip Adjustable Jaw Foot Vise, Sure Grip Tire Upsetter, Bowe Spoke Extractor, B. & O. Blacksmith's Anvils, Boston Tire Bender, Milk Wagon Finished Steps, Hub Shaft Anti Rattler, Pung Shaft Coupling, &c.

BIDWELL-TINKHAM CYCLE COMPANY, New York: Cycling Information. This little pamphlet is devoted to the rates for instruction, storage and road rental of this company, and also includes a list and description of the kinds of Bicycles to be found in their salesroom. The above company are agents for Tourists, Humblers and Psychos, and also handle the St. Nicholas Mfg. Company's standard line of wheels.

THE TYLER TUBE & PIPE COMPANY, Washington, Pa.: Lap Welded Knobbed Charcoal Iron and Steel Boiler Tubes, &c. A circular also calls attention to "Algerite" Tubes manufactured by the above concern, especially adapted for locomotive and yacht boilers. They state that, manufacturing their own charcoal iron blooms, they are able to produce a uniform quality of iron for use in Tubes.

PATTERSON, GOTTFRIED & HUNTER, New York: Wire Cloth. The above firm are sending out a heavy paper folder, in which are samples of Wire Cloth. These goods are kept from the finest to the coarsest mesh, in brass, galvanized iron and copper. The folder and samples form a neat reminder of where this class of goods may be obtained.

THE GWINNER MFG. COMPANY, Hamilton, Ohio; Harmon & Dixon, New York, agents: Hardware Specialties. Illustrations show Common Sense, Hercules and Rigid Casters, Hercules Trucks, Common

Sense Stove Trucks, Sensible Cross-Cut Saw Handles, Matador Meat Slicers, Yankee Wrench, &c.

BOSTON & LOCKPORT BLOCK COMPANY, Lockport, N. Y.: Trucks and other specialties. Illustrations are shown of Store and Warehouse Trucks of various patterns, Barrel, Bag, House, Hotel, Carpet, Cheese, Butter, Dry Goods, Cotton, Grain, Packing House, Machinery, Steamboat and other Trucks, Box Trucks, Wagon Trucks, Grain and Meat Wagons, Factory Trucks, Skids, Cant Hooks, &c. Attention is called to their facilities for furnishing special Trucks, many of which they have, from time to time, designed and built to meet the peculiar needs of their customers. They state that the drawings and patterns for such Trucks are, in every case, preserved, and are available at any time for producing similar goods.

Louisville.

(From a Special Correspondent)

THE GENERAL HARDWARE business never lets up at this season of the year, and contrary to the work of the plodding farmer, the early spring is the true harvest of the Hardwaremen. Except in a few lines, whose times have naturally run out, the volume of business grows no less. The jobbers say that increased quantities of goods have to be moved, because the profits are yearly decreasing on each article. This is certainly the case with most staple lines. And it is evident that no dealer would be satisfied this year with last year's profits. The ratio must grow and not diminish. There is a certainty, however, that the retailers and country town stores are not laying in heavy stocks, just because they are talked into it; there is a large, healthy consumptive demand, and only such articles as are needed are called for freely.

Bar Iron continues low, but the mills keep full of business, some of the largest ones refusing to bid on most desirable orders, simply because they are full for months. The dealers, however, find no difficulty in placing orders on satisfactory terms and get reasonably prompt attention. Manufacturers of miscellaneous Steel, such as Tire, &c., are also very busy; the Rail mills, those depending on weights less than standard, seem to have more time to hunt customers, although there is considerable business in this line from the Southern pine forests.

Wire Nails are holding firm and there is no reason why they should show any weakness for 60 days yet. The price of \$1.55, f.o.b. Pittsburgh, or equivalent, seems to be strictly adhered to. Jobbers who had big orders booked at the old low prices have made good money, and deserved it too, for when in the past 18 months have things turned out to their liking? These contracts are being exhausted now and the dealers should not object to paying full prices for renewal. It is to be hoped the mills will not try to break the camel's back by any further advances.

Cut Nails got no rest by reposing on the Wire Nail couch. The average business is being carried to as great an extreme as ever before. They can't rest where they are; some other basis will have to be decided on.

Barbed Wire also holds well. The dealers have profited by the mills' ad-

vances to \$1.60 and sold out their contracts nicely; the only trouble is, they failed to buy enough when bottom was reached and had to climb up with the mills. Plain Wire was also affected by the withdrawal of old prices. The Builders' Hardware trade still promises remarkably well. Several heavy fires among the whisky interests will call for many large warehouse contracts.

American Goods in Australia.

THE Storekeeper of Sydney, New South Wales, in a recent issue has the following remarks on the importation of American goods into Australia:

For some months past, importers of American goods have had anything but a rosy time, and complaints that the trade was not worth doing were loud and frequent. Curious as it may appear, this unsatisfactory condition of things is chiefly the result of intense and, as many think, absurd competition among shipping firms at New York and San Francisco. The competition in this direction has been so severe that freights have been cut down to charter cost, and in some cases, we are informed, actually below it, while "fill-up" cargo has been consigned to this market in such quantities as to necessitate either costly storage or acceptance of ruinously low prices. Consignees usually accepted the latter alternative. It might at first blush appear that importers have profited by the cheapness of American outward freights, but owing to the intensity of the competition among shipping firms, each drop or "cut" was followed by a further fall, so that any benefit in this direction has been largely if not altogether neutralized. Early arrivals were undersold by later ones, and in many instances the quantities of goods imported were so large that a prompt or profitable sale was out of the question. All this was of course foreseen and foretold when the competition commenced, and the consequences then predicted have been fulfilled almost to the letter. It now appears, however, that the competition has come to an end, that the last established of the competing companies is to be wound up, and that those who remain have come to an agreement among themselves to maintain the rates of freight at a fair figure, and so regulate the number of vessels to be placed on the Australian berth that the supply of tonnage shall not be largely in excess of the legitimate requirements of the trade. If, however, they are tempted by the security of their position to raise rates unduly, further competition may be looked for as a matter of course. In the meantime it appears very unlikely that future arrivals of bulky or weighty goods from New York or Boston can be laid down at the prices which have until recently been ruling, and the course of trade in this direction for the next few months should consequently be more satisfactory to holders.

It Is Reported—

That N. S. Hoyt, who has been in the Hardware business in Amesbury, Mass., for the past four years, has accepted the position of general manager of a large Hardware firm in Boston and will carry on a branch house in Amesbury. For this purpose he has rented the store at 74 Main street, where he will put in a complete line of Hardware. He will also carry a full stock of Doors, Windows and Blinds.

That Russell & Palmer, who have succeeded the firm of Schlenker & Russell,

Batavia, N. Y., have added a full line of Shelf Hardware to their stock of Stoves, Ranges and General Hardware, and considerably increased their facilities for business. Mr. Palmer will confine himself to the inside business of the establishment, while Mr. Russell will have charge of the steam and water fitting and general plumbing.

That G. A. Welling's Hardware store at Columbus, Ohio, was robbed on the 27th ult. The goods stolen are valued at over \$100.

That S. T. Hunt, dealer in Hardware, Jersey City, N. J., will soon erect a fine four-story building adjoining his store. The structure will be 65 feet deep. The first floor of the building will be used as a store.

That the Hardware firm of Howard & Smith, Wyalusing, Pa., has been dissolved, Mr. Howard retiring. E. A. Strong has purchased an interest in the business and it will hereafter be conducted under the style of Smith & Strong.

That Parker & Wearner, dealers in Hardware, furniture, &c., Wilcoxville, Neb., have dissolved partnership.

That McDaniel & Green is the style of a new Hardware firm that will soon open for business at Abilene, Texas. Mr. McDaniel has for five years been head salesman with the Hardware firm of E. S. Hughes & Co.

That the Hardware store of Gano Bros., Annandale, N. J., was broken into by burglars on the 30th ult., and a large safe was blown open, completely wrecking the heavy door. The burglars got nothing of value for their trouble except a few Knives, the safe being used only for the storage of books.

That the Hardware store of Humphrey & Marvins, Springwater, N. Y., was robbed on the 29th ult.

That Marsh & Uhlig, dealers in Hardware, Minden, Neb., have been succeeded by A. B. Clarke.

That the V. Tausch Hardware Company have been organized at La Crosse, Wis., with a capital stock of \$30,000. The incorporators are Vincent Tausch, Alphonse Hussa and Joseph Poehling.

That J. S. Heseltine has entered into partnership with S. C. Sturtevant in the Stove and Tinware business at Pittsfield, Maine.

That the firm of Versack & Magnusson, Hardware dealers, Lyons, Iowa, have dissolved.

That R. A. Costello has retired from the Hardware firm of J. J. & R. A. Costello, Duluth, Minn.

That George Sigler, Gilpin S. Woodward and Charles G. Guyer have purchased the Hardware business of the late James V. Carlisle, Wilmington, Del., and will hereafter conduct it under the style of Sigler, Woodward & Guyer.

That on the 4th inst. one of the large show windows of Keller & Mumma's Hardware store at Steelton, Pa., was broken by thieves, who then entered the establishment and carried off a large number of Revolvers and other fancy Hardware articles.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

The general distribution of Paints and Colors improves as the spring season advances, but the volume of business is hardly up to previous calculations. Unfavorable weather for outdoor work is

accountable, in some measure, for this disappointment. Backwardness of building operations on the outskirts of the large cities and in the interior is something of a drawback, however, and the condition of the money market has, indirectly at least, more or less restraint upon car and carriage building and other lines of manufacture in which Paint is consumed in considerable quantities. However, the general movement appears extensive enough to keep the market for all the prominent articles in fairly good form, as far as tone is concerned. In any event competition in nearly all lines appears to be temperate and the fluctuations in prices are comparatively few and narrow.

White Lead.—There has been a good steady demand for corrodors' product and the cheaper class of Leads have, to all accounts, held their own in the general movement. On prices no changes have taken place. At some few distant points where competitors make what has been termed a hostile demonstration against the National Company's product that concern quotes special rates occasionally, but it is affirmed in no uncertain language, that the official list is otherwise rigidly adhered to and that there is no intention of revising the list in the immediate future. In view of misstatements that have appeared in print of late, we reproduce it in form readily comprehended:

	Dry.	In kegs.	In barrels.
Lots of less than 500 pounds.....		\$0.07½	
" " 500 pounds to 5 tons at one purchase.....		.06¾	\$0.06¾
Lots of 5 tons to 12 tons at one purchase.....		.06½	
Lots of 12 tons and over at one purchase.....		.06½	.06

White Lead in Oil, in kegs, same as Dry White Lead in similar packages. Terms: On lots of 500 pounds and over, 60 days or 2½ per cent. discount for cash if paid in 15 days from date of invoice. All prices f.o.b. New York. Those prices are shaded more or less on small quantities by jobbers, which fact, along with misconception about Dry Lead in kegs and in barrels, probably accounts for the misstatements that appear in some so-called market reports. Corrodors that do not work in harmony with the National Company shade the official list ¼ cent, but rarely more than that.

Red Lead and Litharge.—There has been a good seasonable trade in both commodities, including fair quantities of foreign brands for prompt and near future delivery. Prices remain the same as quoted for several weeks, with the undertone very steady.

Orange Mineral.—Quite good orders have been received for domestic brands and increase in sales of foreign kinds is noted. There is no change in prices, however, and the position of supplies is generally referred to as being favorable.

Zincs.—New orders are coming in rather slowly at the moment, chiefly for the reason that large consumers previously contracted for supplies sufficient to tide over their probable requirements during the next three months. Deliveries on those contracts absorb the bulk of supply, however, and prices remain very steady. In foreign varieties there is a fair movement of jobbing quantities at old prices.

Colors, &c.—For the more staple lines of Dry Colors there has been a fair average general demand and the reputable lines of Oil Colors have fared nearly as well. On such goods prices remain steady, but inferior product moves at very irregular prices. No distinctly new feature develops in the market for ready-mixed Paints.

Miscellaneous.—Chalk, Whiting, Paris White and putty are moving at about former prices, but chiefly in moderate quantities. Inquiries are coming in for prices on round lots for shipment on the opening of navigation.

Oils and Turpentine.

Continued depression in the price of Lard and inferior Greases, and more or less

weakness in everything else used in the manufacture of artificial Butter, Soap, &c., have figured as the conspicuously prominent features of the Oil market. This covers pretty much everything on the list outside of Linseed and Fish products, thus giving the general market a very debilitated appearance for the time being. As natural under existing conditions buyers have operated with extreme caution in the varieties of Oils most directly affected by the depression in Greases, and dealings of other than very modest jobbing character are few and far between. The outlook is uncertain, and future prices depend in a good measure upon the turn in the Lard speculation.

Linseed Oil.—There have been rumors of sales of one or more Western brands at prices about 1¢ below the general quotation, but as to the amount of truth back of the rumor nothing could be learned. City crushers state that sales of their product have been fully up to the average and wholly at former prices, also that the demand is quite satisfactory. Stock-jobbing stories of a renewal of hostilities among Western producers have circulation, but there is nothing in the condition of the market for Oil suggestive of the least apprehension there of impending difficulties.

Cotton-Seed Oils.—The market has been weak and depressed from top to bottom. Speculative holdings were dropped whenever opportunity offered, and that pressure, along with urgent offering by representatives of smaller producers, due chiefly to the break in the Lard market, has not only weakened prices greatly, but so disturbed market conditions that it is virtually impossible to determine what are bottom prices. There are sellers at 42¢ for prime crude, 45¢ @ 46¢ for prime Summer Yellow, 50¢ for prime Summer White, and corresponding prices for inferior grades. The following revised list has been issued by the Union Oil Company, Providence, R. I.:

	Lots of 1 to 10 bbls. Cents.	Lots of 10 bbls. over. Cents.
Pure Salad.....	57	55
Olive Flavored.....	57	55
Winter White.....	57	55
Winter Yellow.....	56	54

The above sold by weight, 7½ lb to the gallon. Terms, net cash.

Lard Oil.—Prices have been sliding gracefully downward under the influence of the depression in the market for raw material and the market is in such perturbed condition that it is impossible to quote accurate value. In fact all quotations must be accepted as purely nominal pending more settled surroundings. It is of interest to note, however, that prime quality Oil has been openly offered at 82½¢ by city pressers, while some buyers have been given to understand that bids of 80¢ would receive careful attention.

Cocoanut Oil.—The unsettled condition of the market for other soap-making material has checked operations in this commodity, but holders are taking very good care of the stock they have on hand, since present prices are not abnormally high. Hence little movement in values despite the slowness of trade at present and the rather unfavorable surroundings.

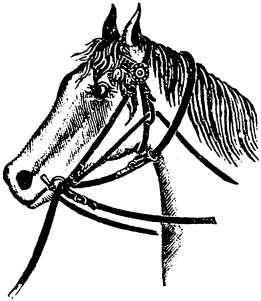
Fish Oils.—The market for Crude Sperm Whale and Menhaden Oils has remained stationary. There is little stock in first hands and the demand is slow. Manufactured products are moving very fairly in a jobbing way at the old range of prices.

Miscellaneous.—Quotations on Tallow Oil have been dropped to 58¢ @ 60¢, but there is no business and the figures are purely nominal ones. Red Oils are now offered at 5½¢ @ 5¾¢ for Saponified and 44¢ @ 46¢ for Elaine, but find very slow sale.

Spirits Turpentine.—Owing to a decline in the Southern markets prices are still lower here and the market at present is dull as well as weak. Sales have been made at 31½¢ for regular and 32¢ for machine barrels.

Covert's Gentlemen's Horse Tie.

Covert's Saddlery Works, Farmer, N. Y., are offering the form of tie shown in the accompanying cut. The tie is made of harness leather, and is designed to be snapped around the neck and the tie passed through a bridle-bit ring. This, it



Covert's Gentlemen's Horse Tie.

is stated, keeps the horse's head more closely confined than it otherwise would be, and at the same time avoids the strain upon the bridle. The advantage of this tie over a rope tie is explained as consisting in its neatness, lightness and durability; also in its not tumbling the mane.

Torsion Grocers' Balance.

The Springer Torsion Balance Company, 92 Reade street, New York, are putting a grocers' scale on the market, as illustrated in Fig. 1. The balance takes its name from the manner in which the fulcrums

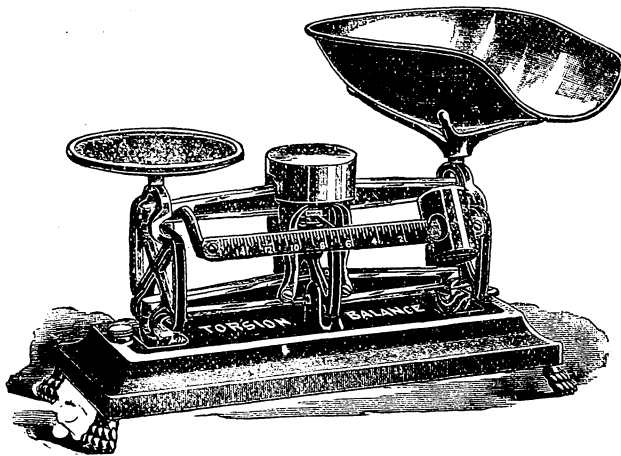


Fig. 1.—Torsion Grocers' Balance.

twist or "torse." There are no knife edges about the scale, but the beams tip or oscillate upon sensitive steel bands, sprung upon trusses, as shown in Fig. 2. The trusses are first cast and then accurately cut out, so that, it is stated, they do not vary $\frac{1}{1000}$ inch where the bands are placed. After the band is sprung on

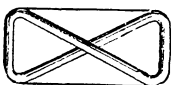
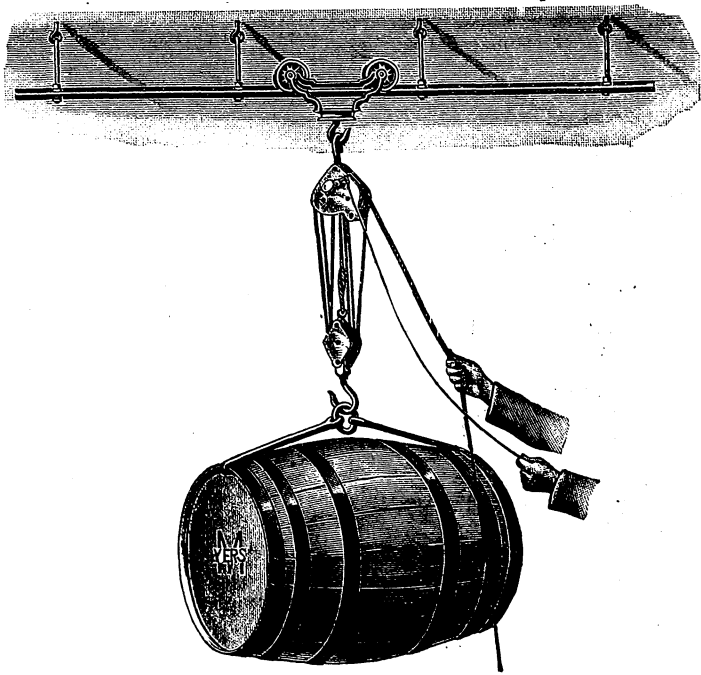


Fig. 2.—Truss and Band.

to the truss, the truss is put under a squeezing machine to expand it equally in all directions from the center. This causes greater tension of the band, and the expansion is continued until the band on the center truss vibrates to the note F sharp. The bands on the end trusses are tuned in the same manner to F. The center truss has a base by which it is rigidly fastened to the base of the scale, and to the upper and lower bands of

this truss the scale beams are attached, the beam being pivoted at the base, below the lower steel band. Upon these

a system of malleable clamps, with hangers so spaced as to coincide with the timbers to which they are attached. This special



Myers' Merchandise Conveyor.

bands the scale tips or oscillates, and the bands take the place of knife edges. The end trusses, one of which is seen in Fig. 2, are only used for holding the ends

jointed hanging-hook track, with trolley, is used in connection with a Sure Grip lifting block, as shown in the illustration, which, when properly supported, has, it is stated, a capacity up to 2000 pounds. The tackle block is so arranged as to have a Sure Grip device, retaining the load at any point to which it may be elevated. The manufacturers claim that this is a strong and reliable arrangement that can be placed in any kind of building, and that can be used in almost any well-organized business with profit, in saving of room, time and hard labor. It is designed as a merchandise conveyor of moderate capacity for warehouses, storerooms, distilleries, feed barns, &c., and is referred to as being furnished at low prices.

Family Grist Mill.

The Rogers Iron Company, Springfield, Ohio, are offering a farm and ranch family grist mill, mounted in various styles, two of which are shown in the accompanying cuts. They are also made with a bracket to fasten to the wall, and with a low stand to bolt to a table or bench. The

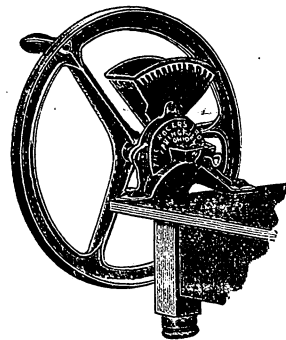


Fig. 1.—Family Grist Mill.

of the beams in place, and are not attached to the base of the scale. The ends of the beams are fastened to these bands in the same manner as at the center. It is stated that the scales are made of the best material obtainable by experienced and skilled workmen. All parts are interchangeable, and can be easily duplicated if accidentally broken; also, that the working parts of the scale are virtually one piece, as the beams are made fast to the fulcrums. It is explained that this obviates the errors arising from the scale shifting, and that the various parts of the balance cannot be displaced. The manufacturers claim that the scales are accurate, durable, sensitive and simple in construction. The scale is made in various sizes, with and without the poise and weighing beam.

Myers' Merchandise Conveyor.

F. E. Myers & Bro., Ashland, Ohio, are putting on the market the above article, as herewith shown. The track is their double steel-rail hay carrier track, composed of two T steel rails, put together entirely by

mill is described as having large chilled iron burrs, $4\frac{1}{2}$ inches in diameter, ground perfectly true; the burrs having teeth which cross at angles, insuring rapid grinding. The shaft is of steel, with a fly wheel 20 inches in diameter. It is remarked that the workmanship on the mill is first-class and that all parts are made to

duplicate. The mill is adjusted by one thumb screw for different kinds of grinding, and the makers claim it is adapted to grinding corn, wheat, coffee, spices, or grain of any kind for domestic uses or feeding purposes. The manufacturers state that corn meal, hominy and graham flour may be produced at the operator's home

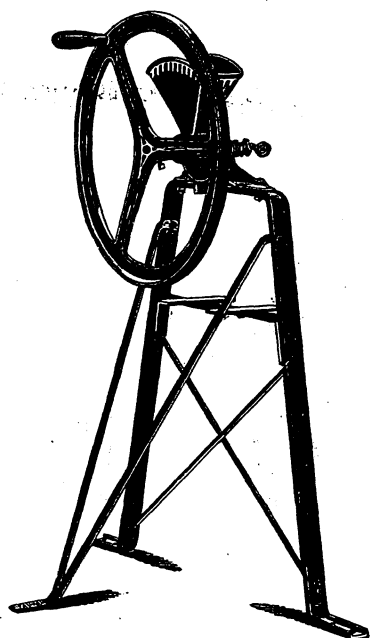
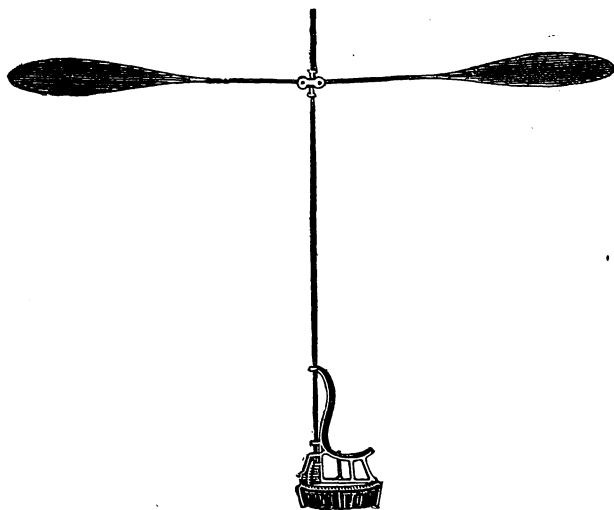


Fig. 2.—Grist Mill With Legs.

fresh and pure; that the mill grinds 1 pound of coffee in one minute, and flour or meal in a longer or shorter time, according as the mill is set to grind fine or coarse.

The Columbia Fly Fan.

Matthai, Ingram & Co., Baltimore, Md., and 42 Cliff street, New York, are introducing a keyless fly fan, as shown herewith. It is wound by holding the base in one hand and turning the wing holder in the other. An automatic stop allows the wings to be stopped instantly, when the wing rod is lifted or taken off, and the wings revolve as soon as the wings and rod are replaced, the weight of the wings and rod releasing the stop. The manufacturers state that the fan will run effectively one hour after each winding. It is finished in nickel or antique bronze. The wing holder is referred to by the makers as resembling to some extent the outlines

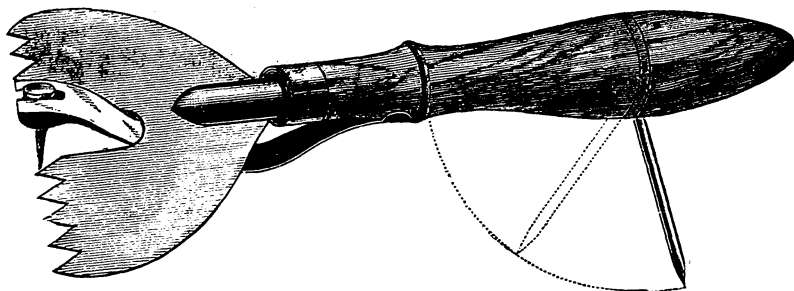


The Columbia Fly Fan.

of a Columbus or a fifteenth century vessel, and the base and movement that of a modern propeller.

Combined Carpet Stretcher and Tack Holder.

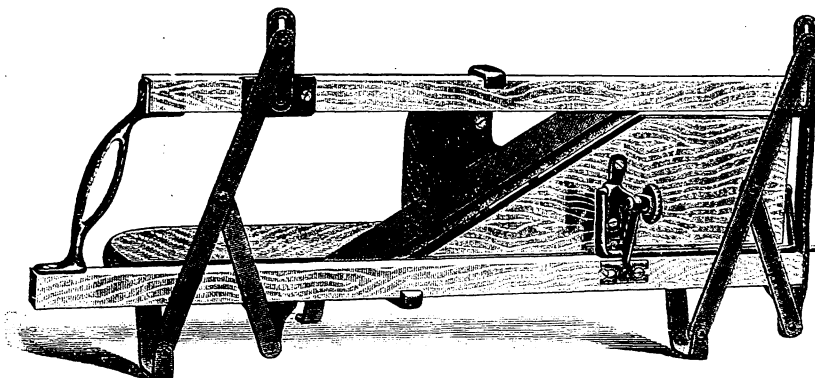
The household tool illustrated herewith is being introduced by Wm. Vogel & Bros., 37-47 South Ninth street, Brooklyn, N. Y., as selling agents for H. Clayton & Co. The device consists of a polished steel plate, $3\frac{1}{2}$ inches wide, with teeth, the plate being fastened into a substantial wood handle. A steel spring forming the tack holder is attached at one end to the



Combined Carpet Stretcher and Tack Holder.

lower side of the handle, the other end coming up through an opening in the blade. A steel pin is hung in the handle and folds into a groove when not in use. In stretching carpet a tack is placed in the

knife. It is stated that in the construction of the slicer ordinary grooves are dispensed with and parallel levers substituted, and that the easy action of the knife is not affected by shrinking, swelling



The Matador Meat Slicer.

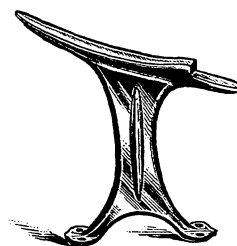
holder, and the pin in the position indicated by the dotted lines. The carpet after being brought up to the base board is held in place by the pin until the tack is driven half way in by a blow of the hammer, when the stretcher is withdrawn and the tack driven home. The stretcher measures about 9 inches over all.

The glass works at Kokomo, Ind., have cast a plate $12\frac{1}{2}$ feet wide by 18 feet in

or warping. It is pointed out that in this machine small fragments of meat do not find lodgment in the grooves and recesses, and become decayed, on account of the substitution in this machine of levers for grooves.

Chicago Shoe Blacking Foot Rest.

Chicago Spring Butt Company, Chicago, Ill., are offering blacking foot rests, as illustrated herewith, designed to be used in connection with blacking chairs. The rests are constructed with a view to be more easily cleaned, and the plate to incline the foot at such an angle



Chicago Shoe-Blacking Foot Rest.

as to admit of its being held firmly by a bracing pressure from the back of the chair more than from a weight pressure of the foot and leg, as with horizontal plates. They also allow the operator to assume a more natural position. The rests are made in four sizes—5, 7, 9 and 12 inches high, both japanned and of bronze metal.

Howarth's Reversible Sash Centers.

The accompanying cuts show two of a series of sash centers put on the market by Howarth Reversible Sash and Sash Center Company, Detroit, Mich. The No. 2 center, Fig. 1, is designed especially for hanging very heavy plate-glass windows at the sides. The edges of the sash are to be reverse rebated, as shown in Fig. 2, which, with the addition of the No. 2

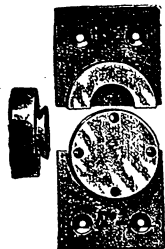


Fig. 1—No. 2 Howarth's Sash Center.

center—which it is stated is dust proof—makes what is referred to as a first-class job. The center is made in sizes for 2½ and 3 inch sash, in both brass and iron. The manufacturers state that these centers make it easy for one man to hang the largest sash alone, as the upper plate of the center can be put in place after the sash is hung, there being the requisite bevels on the back side of the upper plate and on the end of the pivot to allow the plate to go home, and to fill the space already prepared for it; also, that the center cannot be broken down or worn out. Bevels can be cut on the ends of the stops, as shown in Fig. 2, to allow the sash to turn over for cleaning from the inside. Win-

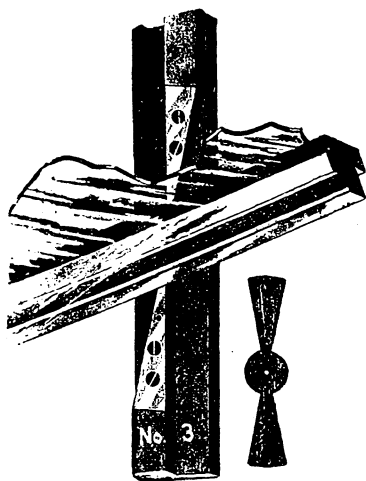


Fig. 2.—No. 3 Howarth's Sash Center.

dows weighing 350 pounds, the manufacturers state, have been hung with these centers. The center shown in Fig. 2 is intended for either sides or the top and bottom of windows, or for the ventilator windows in cars. This center is also recommended and used by the manufacturers for reversible and sliding sash, as shown in the cut. In such cases the window frame has a specially constructed head to allow the lower sash to raise 3½ inches higher than usual, so that the upper sash may be drawn down and reverse. The sash cord or ribbon is attached to the vertical pieces which slide up and down between the stops on the frame. In this manner of combining sliding and reversible sash, either sash will draw down and reverse for cleaning. The company also manufacture a center, known as No. 4 Automatic, suitable for hanging extremely large sash top and bottom, which, it is stated, will hold any

sized sash in three different positions for ventilation. Another center, No. 3 A, is made for 1½, 1¾ and 2¼ inch sash, of iron only, and is designed for factories, warehouses, &c., and admits of hanging sash without reverse rebating them, and still makes, it is stated, a weather proof joint. Their No. 4 center is intended for use on circular and oval windows to hang them on the sides, the sash to be reverse rebated above and below the center. Other styles of centers, Nos. 0, 1, 5 and 3 B, are intended for cheaper grades of sliding and reversible sash, and are made only in 1½ and 1¾ inch, but of either brass or iron. All of the last centers referred to are adapted to use with reverse rebates, and No. 5 can also be used for transoms over doors without reverse rebating, if desired. Windows on which cord and weights have been used can have these centers applied. A list of buildings upon which the centers are in use will be furnished by the manufacturers upon application.

The Evans Garden Cultivator.

Evans Garden Cultivator Co., Paris, Mo., are offering this tool, as shown in the accompanying cuts. The teeth are fastened in

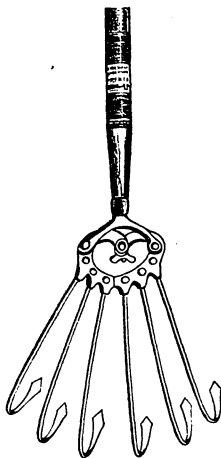


Fig. 1.—The Evans Garden Cultivator.

sockets, and are opened and closed by a triple-hinge adjustment. When opened, as in Fig. 2, the tool cultivates on both sides of small vegetation by pulling it through the earth. It is explained that the teeth or plows are set at such an angle

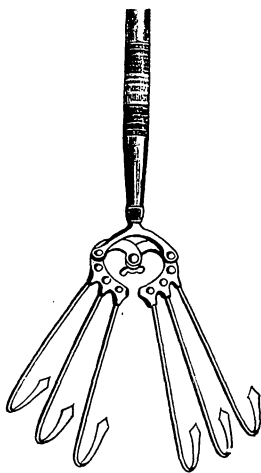


Fig. 2.—Cultivator Open.

that they readily enter the most compact soil by a slight downward pressure, while in loose earth it requires only to be dragged along to loosen and pulverize the ground, throwing the loose earth toward the root of tender vegetation, combining

at once, it is stated, the advantages of the hoe, rake and plow, and avoiding the tiresome digging motion of the hoe.

The Eli Washing Machine.

The Boss Washing Machine Company, Cincinnati, Ohio, are introducing the above washer, as illustrated herewith. The working parts of the machine are described as consisting of a corrugated cylinder for rubbing and turning the clothes, with the



The Eli Washing Machine.

handle for operating set back of the machine, turning loosely in the hand. The manufacturers claim that the machine cleanses the clothes more thoroughly than could possibly be done with an old-fashioned board; that the washer is so arranged that it is impossible to tear the clothes, and that it is so simple in operation that a child can work it without fatigue.

The New York Pilot Commissioners have decided to permit the introduction of steam power in their fleet, although but a few years have expired since they strenuously opposed the use of a pilot steamer which one of the foreign steamship lines provided on its own account. The new steamers will be 130 feet in length and carry 20 pilots instead of five, the number usually carried by the schooners now employed. It has been argued against the use of steamers that vessels of the small size needed for pilot boats could not carry enough coal to keep them off shore until they had discharged their pilots; that the fires under the boilers could not be kept up in the constant rolling to which such boats would be subjected, and that not being as seaworthy as schooners they would be compelled to run for shelter in rough weather, leaving incoming vessels to get into port as best they might.

It appears that certain restrictions are imposed upon foreign travelers who wish to do business in Sweden. A law prescribes that all persons of any nationality, other than that of Sweden and Norway, who propose communicating with customers about business of any kind must immediately on their arrival obtain a license to do so from the local authorities.

The makers of armor plate will be interested in a test of armor placed at an angle of 45 degrees, which is soon to take place at the naval proving grounds at Indian Head. The test will be more like that of actual warfare, as a direct attack at short range is not the usual condition in hostile operations.

Exports of cotton goods from the United States in February were considerably less than in February last year, owing chiefly to the small shipments to China.

Current Hardware Prices.

APRIL 14, 1893.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

The character @ is used to indicate a range of price; thus discount 50&10@50&10&5 % signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

Adjusters, Blind—

Domestic.....\$ doz \$3.00, 33%
Excelior.....\$ doz \$10.00.....50&10&5
North's.....\$ doz \$10.00.....50&10&5
Zimmerman's—See Fasteners Blind.

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils—

Eagle Anvils, 10 9/16.....15@15&5
Peter Wright's.....11@11 1/4
Armstrong's Mouse Hole.....10@11 1/4
Am. Wrought, Horse shoe brand, 11 1/4
Trenton.....10@11 1/4
Wilkinson's.....10@11 1/4
Barnes Mfg. Co.....33%&5

Anvil Vise and Drill—

Millers Falls Co., \$18.00.....20%
Cheney Anvil and Vise.....25%
Anvil and Vise \$3.00.....40&10%
Star.....45&5

Apple Parers—See Parers, Apple, &c.

Augers and Bits—

Common Augers and Bits.....70%
Boring Machine Augers.....70%
Car Bits, 12-in. twist.....50%
Russell Jennings' Augers and Bits, 25&10%
Jennings' Pattern Car Bits.....40%
Jennings' Pattern Auger Bits.....60&5
Snell's Bits.....60&5
C. E. Jennings & Co., No. 10, extension 40%
H. P.....40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, set, 32%
quarters, No. 5, \$5; No. 30, \$3.50, 25%
Lewis' Patent Single twist.....20%
Pugh's Black.....30%
Pugh's Jennings Pattern.....30&10%
L'Hommedieu Car Bits.....15&10%
Forstner Pat. Auger Bits.....15%
Cincinnati Bell-Hangers' Bits.....30&10

Bit Stock Drills—

Morse Twist Drills.....50&10&5
Standard.....50&10&5
Cleveland.....60&10&5
Syracuse, for metal.....60&10%
Syracuse, for wood (wood list).....30&10&5
Cincinnati, for wood.....45&10%
Cincinnati, for metal.....45&10%

Expansive Bits—

Clark's small, \$18; large, \$26.....35@35&10%
Ives' No. 4, \$ doz \$60.....40%
Swan's.....40%
Stearns' No. 1, \$26; No. 2, \$18.....35&40%
Stearns' No. 2, \$48.....20%

Gimlet Bits—

Common.....\$ gross \$2.75@3.25
Diamond.....\$ doz \$1.25.....40&10%
Bee.....25@25&5
Double Cut, Shephardson's.....45@45&10%
Double Cut, Ct. Valley Mfg. Co.....30&10%
Double Cut, Hartwell's, \$ gro., \$5.00.....40&10%
Double Cut, Douglass.....40&10%
Double Cut, Ives.....60@60&10%

Hollow Augers—

Ives' French, Swift & Co. (Beecher) } 33%&33%
Douglass } 10%
Bonney's Adjustable, \$ doz \$48.....50%
Stearns'.....20&10%
Ives' Expansive, each \$4.50.....60&5
Universal Expansive, each \$4.50.....20%
Wood's.....25@25&10%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%

Ship Augers and Bits—

L'Hommedieu's.....15&10@15&10&5
Watrous'.....25@25&10%
Snell's.....15&10@15&10&5
Snell's Ship Auger Pattern Car Bits.....15&10@15&10&5

Awl Hfts—See Hfts, Awl.

Awls—

Awls, Sewing, Common.....\$ gr. 85¢@90¢
Awls, Should. Peg.....\$ gr. \$1.50@1.55
Awls, Pat. Peg.....\$ gr. 35¢@38¢
Awls, Shouldered Brad.....\$ gr. \$1.30@1.40
Awls, Handled Brad.....\$ gr. \$2.50@3.00
Awls, Handled Scratch.....\$ gr. \$4.00@4.50
Awls, Socket Scratch.....\$ doz \$1.10@1.20

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

First quality, best brands, \$7.00.....Beveled.....\$7.50
First qual., other brands } 6.50 }
Second quality.....5.50 } 6.00

Axle Grease—See Grease, Axle.

Axles—

No. 1.....3 1/2@4 1/4, No. 2, 5@6 1/2
Nos. 7 to 14.....60&10%
Nos. 15 to 18.....47 1/2@50 } 3% cash
Nos. 19 to 22.....70%
Concord Axles, loose collar.....4 1/4@6 1/4
Concord Axles, solid collar.....5 1/4@7 1/4
National Tubular Self Oiling.....3 3/4@3 3/4&5

Bag Holders—See Holders, Bag.

Balances—

Spring Balances.....40%
No. 3000 20 30
Chatillon, \$ doz.....\$5.50 0.95 1.75 net
Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Barb Wire—See Wire, Barb.

Bars—

Crow—
Cast Steel.....\$ doz \$1.50
Iron, Steel Points.....\$ doz \$1.50

Basins, Wash—

Standard Fiberware, No. 1, 10 1/2-in., \$1.80;
12-in., \$2.00; 13 1/4-in., \$2.50; 15-in., \$3.00.

Beams, Scale—

Scale Beams, List Jan. 12, '82, 50&10@
50&10&5
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custers.....33%&5

Beaters—

Egg—
Dover.....\$ doz \$1.00@1.20
Duplex (Standard Co.).....\$ doz \$1.00
Dover (Standard Co.).....\$ doz \$1.00
Duplex Extra Heavy (Standard Co.).....\$ doz \$3.50
Bryant's.....\$ gross \$14.00
Double (H. & R. Mfg. Co.) \$ gro., No. 0 \$12.00; No. 1, \$15.00; No. 2.....\$38.00
Easy (H. & R. Mfg. Co.).....\$ gro \$12.00
Triple (H. & R. Mfg. Co.).....\$ gro \$16.50
Spiral.....\$ gro \$4.25 @ \$4.50
Improved Acme (H. & R. Mfg. Co.).....\$ gro \$9.00
Silver & Co.....\$ doz \$5.50

Culinary—

Keystone, P. D. & Co., Each, No. 1, \$1;
No. 2, \$2.....20%

Bells—

Cow—
Common Wrought.....60&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Kentucky Durham.....70&10%
Dodge, Genuine Kentucky.....70&10%
Texas Star.....50&10@50&10&5

Door—

Gong, Abbe's.....33%&10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10@50%
Crane, Brooks'.....60&10&5
Crane, Cone's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated.....net
Lever, Taylor's Japanned.....25&10%
Lever, R. & E. Mfg. Co.'s.....50&10&2%
Pull, Brooks'.....50&10&2%

Electric—

Wellensack's.....20%
Bigelow & Dowse.....20%

Hand—

Light Brass.....70&10@70&10&5%
Extra Heavy.....70%
White.....70%
Silver Chime.....33%&10%
Globe Cone's Patent.....25&10@35%

Miscellaneous—

Call Bells.....45@50%
Farm Bells.....\$ 3@3 1/2
Steel Alloy Church and School Bells.....40%

Bellows—

Blacksmiths'.....60&10&5@60&10&10%
Molders'.....40&10&5@50%
Hand Bellows.....40&10&5@50%

Belting, Rubber—

Common Standard.....70&10@75&5%
Standard.....70&5@70&10%
Extra.....60&10@60&10&5%
N.Y.B. & P. Co., Carbon.....60%
N.Y.B. & P. Co., Diamond.....60%
N.Y.B. & P. Co., Para.....40%

Bench Stops—See Stops, Bench

Benders and Upsetters, Tire—

Stoddard's Lightning Tire Upsetters.....15%
Detroit Perfected Tire Bender.....15%
Green River Tire Benders and Upsetters.....20%

Bits—

Auger, Gimlet, Bit Stock Drills, &c., see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—

Cleveland Block Co., Mal. Iron, 50&50&10%
Moore's Novelty, Mal. Iron.....50%
Sure Grip Steel Tackle Blocks.....25%

Bolts—

Carriage, Machine, &c.—

Com. list June 10, '84.....75&10&5@80%
Genuine Eagle, Norway, list Oct. '84.....80&5@80&10%
Eagle, Norway, list Oct. '84.....80&5@80&10%
Phila. pattern, list Oct. 7, '84.....80%
R.B. & W., old list.....70%
Machine, list Jan. 1, 1890.....80&10%
Bolt Ends, list Jan. 1, 1890.....80&10%

Door and Shutter—

Cast Iron Barrel, Square, &c.....70&10%
Cast Iron Shutter Bolts.....70&10%
Cast Iron Chain (Sargent's list).....65&10%
Ives' Patent Door Bolts, 60&10@60&10&5%
Wrought Barrel.....70&10@75%
Wrought Square.....70&10@75%
Wrt Shutter, all Iron, Stanley's.....60&10@60&10&10%
Wrt Shutter, Brass Knob.....50&50&5%
Wrt Shutter, Sargent's list.....70&10%
Wrt Sunk Flush, Sargent's list.....60&10%
Wrt Sunk Flush, Stanley's list, 50&10&5%
Wrt B. K. Flush, Common.....55&10%

Stove and Plow—

Stove.....60&10@60&10&5%
Plow.....60&10@50@60&10&10%
R. B. & W., Plow.....55%

Tire—

Common, list Feb. 28, '83.....65@65&5%
Port Chester Bolt and Nut Company.....65%
Empire list Feb. 28, '83.....65%
Keystone, Philadel., list Oct. '84.....30%
Norway, Phila., list Oct. '84.....75%
American Screw Company.....75%
Norway, Phila., list Oct. 16, '84.....75%
Eagle, Phila., list Oct. 16, '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....65%
R. B. & W., Philadel., list Oct. 16, '84.....30%

Borers, Tap—

Common and Ring.....20&10%
Ives' Tap Borers.....23%&5%
Enterprise Mfg. Co.....20%
Clark's.....33%&35%

Borax—

Per lb.....9¢@10¢

Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Wagon—

Per b.....24¢

Braces—

American Bit Brace and Tool Co.....80&10%
Nos. 10, 12, 20.....80&10%
Nos. 11, 14, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37.....70&10&5%
Amidon's.....75&10@80%
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Belted Ratchet.....70&10%
Globe Jawed.....40&40&10%
Corner Brace.....40&40&10%
Universal, 8 in., \$2.10; 10 in., \$2.25
Buffalo Ball.....\$1.10@1.15
Barber's.....50&10%
Saxton's.....75&10@80%
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet, Polished.....50&10@60%
Ratchet, Nickeled.....40&10@50%
Buffalo Ball.....net, \$1.10@1.15
Bartholomew's.....50&10@60&5%
Nos. 25, 27 and 30.....70&70&5%
Common Ball, American.....\$1.00@1.10
Fray's Genuine Spofford's.....50&5@50&10%
Fray's No. 70 to 120, 81 to 123, 207 to 414.....50&10%
Ives' New Haven Novelty.....70&70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barber's.....60&5%
Spofford.....60&5@60&10%
P. S. & W. Co., Peck's Patent.....60%
Rose & Johnson.....50%
Davis Patent.....50&10%

Brackets—

Shelf, plain.....65@70%
Regular, list.....65@70%
Sargent's list.....60&10@70&10%
Shelf, fancy.....70&70&10%
Sargent's list.....70&70&10%
Other makes at a wide range of prices.
Bradley Shelf Brackets.....70&10%

Bright Wire Goods—See Wire.

Broilers—

Hen's Self-Inch.....9 10 9x11
Basting.....\$ 4.50 5.50 6.50
New Haven.....50%
Wire Goods Co.....65&10%
Morgan Odorless.....\$ doz \$12, 60%
Queen City.....33%&5

Buckets, Well—

Galvanized—
Hill's.....\$ doz. 12 qt. \$4.25; 14 qt. \$5.25
Iron Clad.....\$ doz. 14 qt. \$4.25@4.50
Helwig's Flat Iron Band.....\$5.75
Helwig's Wired Top.....\$ doz \$4.00

Bull Rings—See Rings, Bull.

Butcher's Cleavers—See Cleavers Butchers'

Brass—

Wrought Brass.....80@80&10%
Cast Brass, Tiebout's.....50%
Cast Brass, Fast.....33%&10%
Cast Brass, Loose Joint.....35%&10%

Cast Iron—

Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Broad.....50&10@60%
Loose Joint.....50&10&5@60%
Loose Joint, Japanned.....75@71&10%
Loose Joint, Jap. with Acorns.....75@71&10%
Mayer's Hinges.....75@71&10%
Loose Pin, Acorns.....75@71&10%
Loose Pin, Acorns, Japanned.....75@71&10%
Loose Pin, Acorns, Japanned, Plated Tips.....75@71&10%

Wrought Steel—

Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Lt. Narrow.....50&10&5@60%
Fast Joint, Broad.....50&10&5@60%
Loose Joint, Broad.....50&10&5@60%
Table Butts, Back Flaps, &c.....50&10&5@60%
Inside Blind, Regular.....50&10&5@60%
Inside Blind, Light.....50&10&5@60%
Loose Pin.....50&10&5@60%
Bronzed Wrought Butts.....50@50&10%

Calipers—See Compasses.

Calks, Toe—

Gautier, One Prong, Blunt.....54¢@60¢
Burke's One Prong, Blunt.....54¢@60¢
Burke's, Two Prong, Blunt.....54¢@60¢
Burke's, One Prong, Sharp.....54¢@60¢

Can Openers—See Openers, Can.

Cans, Milk—

S. S. & Co.: 5-gal., \$2.10; 8-gal., \$3.10;
10-gal., \$3.35 each.....25%

Caps—

Percussion—
Hicks & Goldmark's and Union Metallic Cartridge Co.....\$ 100¢
F. L. Waterproof, 1-10's.....35¢@37¢
E. B. Trimmed Edge, 1-10's.....47¢@50¢
E. B. Grand Edge, Cent. Fire, 1-10's.....47¢@50¢

Musket, Waterproof, 1-10's.....47¢@50¢
G. D.....27¢@30¢
S. B. Genuine Imported.....45¢
Eley's E. B.....56¢@58¢
Eley's D Waterproof, Central Fire.....\$1.00

Primers—

Berdan Primers, \$1.00.....25%
B. L. Caps (Sturtevant Shells) \$1.00.....25%
All other Primers, \$1.20.....25%

Cards—

Watson's Cotton, Wool, Horse and File, list January 28, 1891.....25%

Carpet Stretchers—

See Stretchers, Carpet.

Cartridges—

Rim Fire Cartridges.....50&5&5%
Rim Fire Military.....15&2%
Cent. Fire, Pistol and Rifle.....25&5&2%
Cent. Fire, Military and Sporting.....15&5&2%
Blank Cartridges, except 22 and 32 cal., additional 10% to above discount.
Blank Cartridges, 22 cal., \$1.75.....25%
Blank Cartridges, 32 cal., \$3.50.....25%
Primed Shells and Bullets.....15&5&2%
B. B. Caps, Round Ball, \$1.75.....25%
B. B. Caps, Con. Ball, Swgd., \$2.00.....25%

Carpet Sweepers—

See Sweepers, Carpet.

Casters—

Bed.....Brass.....55@55&10%
Plate.....Others.....60@60&10%
Shallow Socket.....40&10%
Deep Socket.....40&10%
Martin's Patent (Phoenix).....45&10@50&10%
Tucker's Patent, low list.....45%
Payson's Anti-friction.....70&70&10%
Payson's Truck.....60&60&10%
Yale Casters, low list.....45%
Yale Gen.....70%
Giant Truck Casters.....35%
Stationary Truck Casters.....50&10%
Stock Truck Casters.....50&50&10%
Gwinner's Common Sense.....45%
Gwinner's Hercules.....45%

Cattle Leaders—

See Leaders, Cattle.

Cement—

Victor Elastic.....5 lb pails \$ 2 1/2

Chain—

Trace, Wagon and Fancy Chains, List revised Oct. 15, 1892.....60@60&10%
American Coil, in cask lots, 3-16 3/4 4-16 3/4 5-16 3/4 6-16 3/4 7-16 3/4 8-16 3/4 9-16 3/4 10-16 3/4 11-16 3/4 12-16 3/4 13-16 3/4 14-16 3/4 15-16 3/4 16-16 3/4 17-16 3/4 18-16 3/4 19-16 3/4 20-16 3/4 21-16 3/4 22-16 3/4 23-16 3/4 24-16 3/4 25-16 3/4 26-16 3/4 27-16 3/4 28-16 3/4 29-16 3/4 30-16 3/4 31-16 3/4 32-16 3/4 33-16 3/4 34-16 3/4 35-16 3/4 36-16 3/4 37-16 3/4 38-16 3/4 39-16 3/4 40-16 3/4 41-16 3/4 42-16 3/4 43-16 3/4 44-16 3/4 45-16 3/4 46-16 3/4 47-16 3/4 48-16 3/4 49-16 3/4 50-16 3/4 51-16 3/4 52-16 3/4 53-16 3/4 54-16 3/4 55-16 3/4 56-16 3/4 57-16 3/4 58-16 3/4 59-16 3/4 60-16 3/4 61-16 3/4 62-16 3/4 63-16 3/4 64-16 3/4 65-16 3/4 66-16 3/4 67-16 3/4 68-16 3/4 69-16 3/4 70-16 3/4 71-16 3/4 72-16 3/4 73-16 3/4 74-16

Chalk Lines—See Lines.**Chisels—****Socket Framing and Firmer**

P. S. & W.	
New Haven.	
Witherby.	75&10@75&10&25
Mix.	
Ohio Tool Co.	
Douglass.	75@75&55
Buck Bros.	30
Merrill.	60&10@80&10&55
L. & J. White.	30@80&55

Tanged and Miscellaneous

Tanged Firmer.	50@50&10
Butcher's.	\$4.75@55.00
Spear & Jackson's.	\$5 to 2
Buck Bros.	30
Cold Chisels, # 2.	15@16

Chucks—

Beach Pat.	each, \$8.00.	20
Morse's Adjustable, each,	\$7.00, 20@20&5	
Danbury.	each, \$6.00, 30@30&5	
Syracuse, Balz Pat.	25	
Graham Patent.	33	
Skinner's Patent Churn.		
Combination Lathe Chucks.	33	
Universal Lathe Chucks.	40	
Independent Lathe Chucks.	40	
Drill Chucks.	15	
Union Mfg. Co.		
Victor.	\$8.50, 25	
Combination.	40	
Universal.	40	
Independent.	40	

Churns—

Tiffin Union, each, 5 gal.	\$3.25; 7 gal., \$3.75; 10 gal., \$4.25.
McDermid Star Barrel Churn, each	6 gal., \$2.60; 10 gal., \$2.75; 15 gal., \$3.00; 20 gal., \$3.25.

Clamps—

R. I. Tool Co.'s Wrought Iron.....	25
Adjustable, Cincinnati.....	15&10
Adjustable, Hammers.....	15@15&5
Adjustable, Stearns.....	30@30&10
Stearns's Adjustable Cabinet and Cor- ner.....	30@30&10
Cabinet, Sargent's.....	70&10
Carriage Makers', Sargent's.....	75@75&5
Carriage Makers', P. S. & W. Co.....	40&10
Eberhard Mfg. Co.....	40&5@40&10
Warner's.....	40&10@40&10&5
Saw Clamps, see Vices, Saw Filers.....	
Carpenier's, Cincinnati.....	25&10
Barnes' Machinists' Clamps.....	33

Cleavers, Butchers'—

Bradley's.	25@30
L. & J. White.	20&5
Beatty's.	40@40&5
New Haven Edge Tool Co.'s.	40
P. S. & W.	33&5@33&10
Poster Bros.	30
Schulte, Lohoff & Co.	40@40&5

Clips—

Norway, Axle, 1/4 & 5-16.	55&5&5
2d grade Norway, Axle, 1/4 & 5-16.	55&5
Superior Axle Clips.	60
Norway Spring Bar Clips, 5-16.	60&5&5
Wrought Iron Felloe Clips.	5
Steel Felloe Clips.	5
Baker Axle Clips.	5

Cloth and Netting, Wire

—See Wire, &c.

Cockeyes—

Hardware list.	60&25
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Cocks Brass—

Hardware list.	60&25
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Coffee Mills—See Mills, Coffee.**Collars, Dog—**

Chapman Mfg. Company.	50&10@60
Medford Fancy Goods Co.	40&10@50
Embossed, Gilt, Pope & Steven's list.	30&15

Combs, Curry—

Fitch's.	50&10@50&10&10
Rubber, per doz.	\$10.00, 25
American Curry Comb Co.	33
Kohler's Magic Oscillating.	40, \$2.00
Kohler's Humane.	40, \$1.75

Compasses, Dividers, &c.

Compasses, Callipers, Dividers, 7/0@70&10	
Bemis & Call Co's.	
Dividers.	65
Compasses.	60&5
Callipers, Wing and Inside or Outside.	60&5
Callipers, Double.	60&5
Callipers, Call's Patent Inside.	30
Excelsior.	60
J. Stevens & Co.'s.	25&10
Starrett's.	
Spring Callipers and Dividers.	25&10
Lock Callipers and Dividers.	25
Combination Dividers.	25

Coolers, Water—

S. S. & Co., 2-gal., \$2.30; 3-gal., \$2.80;	
4-gal., \$3.00; 6-gal., \$3.75 each.	33&25

Coopers' Tools—

—See Tools, Coopers'.

Cord—

Common.	# 2, 9@10
Patent, good quality.	# 2, 11@12
White Cotton Braided, fair.	# 2, 24@25
Common Russia Sash.	# 2, 12@13
Patent Russia Sash.	# 2, 13@14
Cable Laid Italian Sash.	# 2, 19@20
India Cable Laid Sash.	# 2, 11@12
Silver Lake.	
A quality, White, 50#.	25
A quality, Drab, 55#.	25
B quality, White, 30#.	10
B quality, Drab, 35#.	10
Sylvan Spring, Extra Braided, White, 34#.	
Sylvan Spring, Extra Braided, Drab, 39#.	
Semper Idem, Braided, White.	27@28
Egyptian, Inda Hemp, Braided.	26
Massachusetts, White.	29
Samson—	
Braided, White Cotton.	# 2, 37
Braided, Drab Cotton.	# 2, 42
Braided, Italian Hemp.	# 2, 40
Braided, Linen.	# 2, 50
Tate's Solid Braided.	# 2, 56
Hercules, White.	# 2, 25
Hercules, Drab.	# 2, 30
Economy Drab.	# 2, 27
Economy White.	# 2, 22
Ossewan Mills—	
Braided, Giant, White, # 2, 30#.	20
Braided, Giant, Drab and Fancy, # 2.	10

Braided, Crown White, # 2, 50#.

Braided, Crown Drab and Fancy, # 2.

55

Wire Picture—

Braided or Twisted.

Corkscrews—See Screws, Cork.**Corn Knives and Cutters**

—See Knives, Corn.

Crackers, Nut—

Table (H. & B. Mfg. Co.)

Blake's Pattern, # doz., \$2.00.

Turner & Seymour Mfg. Co.

Acme.

Japanned, # gro., \$30.

Nickel Plated, # gro., \$30.

Cradles—

Grain.

Crayons—

White Crayons, # gross.

D. M. Stewart Mfg. Co., Metal Work-

ers, 3 gross, \$2.50.

D. M. Stewart Mfg. Co., Rolling Mill.

gross, \$2.50.

See also Chalk.

Creamery Pails—See Pails, Creamery.**Crow Bars—See Bars, Crow.****Curry Combs—**

—See Combs, Curry.

Curtain Pins—

—See Pins, Curtain.

Cutters—**Meat—**

Dixon's, # doz.

Nos. 1 2 3 4

\$14.00 \$17.00 \$19.00 \$30.00

Woodruff's, # doz.

Nos. 1 2 3 4

\$15.00 \$18.00

Hale's Pattern, # doz.

Nos. 1 2 3 4

\$27.00 \$33.00 \$45.00

American.

Nos. 1 2 3 4

\$5 \$7 \$10 \$25 \$50 \$60

Enterprise.

Nos. 1 2 3 4

\$3 \$2.50 \$4 \$6 \$15

Great American Meat Cutter.

Nos. 1 2 3 4

\$12 \$16 \$18 \$20 \$22

Each, \$2.00 \$2.75 \$3.00 \$3.50 \$4.00

Miles' Challenge, # doz.

Nos. 1 2 3 4

\$22.00 \$30.00 \$40.00

Home No. 1, # doz., \$26.00.

Draw Cut, each.

Nos. 1 2 3 4

\$0.75 \$0.80 \$2.25

Beef Shavers (Enterprise).

Little Giant (P. S. & W. Co.).

Chadborn's Smoked Beef Cutter, # doz.

\$66.00

Tobacco

Champion.

All Iron.

Yashua Lock Co.'s, # doz., \$18.00, 50

Sargent's.

Acme.

Washer—

Johnson's Pat.

Penny's, # doz., Pol. \$14; Jap'd, \$16, 55

Appleton's.

Bonney's.

Cincinnati.

Dampers, &c.—

Dampers, Buffalo.

Buffalo Damper Clips.

Crown Damper.

Excelsior.

Diggers, Post Hole, &c.—

Samson, # doz., \$34.00.

Fletcher Post Hole Augers, # doz., \$36.00.

Eureka Diggers.

Vaughan's Post Hole Auger, # doz., \$5.00

Kohler's Little Giant.

Kohler's Hercules.

Kohler's Invincible.

Kohler's New Champion.

Schneider.

Cronk's Post Bars.

Gibb's Post Hole Digger.

Gibb's National.

Gibb's Columbia.

Gibb's Imperial.

Shimer's Hollow Handle.

Dividers—See Compasses.**Dog Collars—See Collars, Dog.****Door Springs—**

—See Springs, Door.

Drawers.

Money, # doz.

Drawing Knives—

—See Knives, Drawing.

Drills and Drill Stocks—

Blacksmith's.

Blacksmith's Self-Feeding, each \$7.50, 20

Crest, P. S. & W.

Breast, Wilson's.

Breast, Millers Falls.

Breast, Bartholomew's.

Ratchet, Merrill's.

Ratchet, Ingersoll's.

Ratchet, Parker's.

Ratchet, Weston's.

Ratchet, Moore's Triple Action.

Ratchet, Curtis & Curtis.

Whitneys Hand Drill, Plain, \$11.00.

Adjustable, \$12.00.

Automatic Boring Tool.

Chicopee Automatic Drill.

Twist Drills—

Cleveland.

Diamond, W. & B.

Graham's Pat. Groove Shank.

Morse.

New Process.

Standard.

Syracuse (Meta list).

Drill Bits or Bit Stock

Drills—See Augers and Bits.

Drill Chucks—See Chucks.**Dripping Pans—**

—See Pans, Dripping.

Drivers, Screw—

Douglass Mfg. Co.

Disston's.

Buck Bros.

Stanley R. & L. Co.'s

No. 88, Varnished Handles.

Sargent & Co's

No. 1, Forged Blade.

Nos. 20, 40 and 60.

P. S. & W.

Knapp & Cowles

No. 1, Forged Blade.

No. 2.

No. 3.

Nos. 4 and 00, Acme and Ideal.

Stearns.

Gay & Parsons.

Champion.

Clark & Parsons.

Crawford's Adjustable.

Elrich's Socket and Ratchet.

Allard's Spiral, new list.

Kolb's Common Sense.

Syracuse Screw-Driver Bits.

Screw Driver Bits, Parr's.

Fray's Hol. H'dle Sets.

P. D. & Co.'s All Steel.

Cincinnati.

Brace Screw Drivers.

Buck Bros' Screw Driver Bits.

Goodell's Automatic.

Mayhew's Black Handle.

Mayhew's Monarch.

C. T. Williamson Wire Novelty Co.

Egg Beaters—See Beaters, Egg**Egg Poachers—**

—See Poachers, Egg.

Electric Bell Sets—

—See Bells, Electric.

Emery—No. 4 to No. 54 to Flour, CF.

40 gr. 150 gr. F.F.F.

Kegs, # 2.

Kegs, # 5.

Kegs, # 10.

10-cans, 10

in case.

10-cans, less

than 10.

Enameled and Tinned

Ware—See Ware, Hollow.

Escutcheon Pins—

—See Pins, Escutcheon.

Escutcheons—

Door Lock.

Thread.

Wood.

Expanded Metal—

List No. 5.

Lathing.

Fencing, Painted Sheets.

Netting, Painted Sheets.

Door Mats, Galvanized.

Window Guards, Paneled.

Tree Guards, Paneled.

Extractors, Lemon Juice

—See Squeezers, Lemon.

Fasteners, Blind—

Mackrell's, # doz., \$1.00.

Van Sand's Screw Pat. \$15 # gr.

Van Sand's Old Pat. \$15 # gr.

Halters—

Cover's Rope, Jute.....	60&10&10&22
Cover's Rope, 7-16 in. Jute.....	70&22
Cover's Rope, 1/4 in. Hemp.....	50&22
Cover's Adj. Web Halters.....	40&22
Cover's Hemp Horse and Cattle Ties.....	60&10&22
Cover's Jute Horse Ties.....	70&22
Cover's Jute Cattle Ties.....	70&10&22
Cover's Adj. Web Halters.....	35&22
Cover's Saddlery Works Halters.....	33&22
Cover's Saddlery Works Horse and Cattle Ties.....	33&22

Hammers—**Handled Hammers—**

Maydole's, list Dec. 1, '85.....	25&10&35
Buffalo Hammer Co.....	
Hudson & Beckley.....	50&10
Alma Tool Co.....	
Verree.....	
O. Hammond & Son.....	40&10
Fayette R. Plumb.....	
Artisan's Choice, A. E. Nail.....	40&10
Regular Y. & P. A. E. Nail.....	50
Horsehoe Turning Hammers.....	50&10
Other Hammers.....	50&10
Cheney's Claw.....	40&10
Cheney's Machinist's & Riveting.....	50&5
Magnetic Tack, Nos. 1, 2, 3, \$1.25, 1.50 & 1.75.....	30&10
Nelson Tool Works.....	40&10
Warner & Nobles, new list.....	35&10
Peck, Stow & Wilcox.....	40&10
Sargent's.....	40&10

Heavy Hammers and Sledges—

8 lb and under.....	75&10&75&10
8 to 5 lb.....	5
Over 5 lb.....	30
Wilkinson's Smiths.....	10&11

Handcuffs and Leg Irons

—See Police Goods.

Handles—**Cross-Cut Saw Handles—**

Atkins', new list.....	40
Champion.....	15
Ely's Perfection.....	5 doz, \$3.00

Iron, Wrought or Cast—

Door or Thumb.....	
Nos. 0 1 2 3 4.....	60&10&10
Per doz.....	\$0.90 1.00 1.08 1.35 1.50
Broggin's Latches.....	40 doz 30&35
Ronze Iron Drop Latches.....	40 doz 70&22
Jay's Store Door Handles—Nuts, \$1.02.....	
Plate, \$1.10; no plate, \$0.88.....	net
Barn Door, 4 doz \$1.40.....	10&10
Chest and Lifting.....	70&70&10

Wood—

Saw and Plane.....	40&10&50
Hammer, Hatchet, Axe, &c.....	40&40&25
Brad Axl.....	40
Hickory Firmer Chisel, ass'd.....	gr 5.00
Hickory Firmer Chisel, large.....	gr 5.00
Apple Firmer Chisel, ass'd.....	gr 5.00
Apple Firmer Chisel, large.....	gr 6.00
Socket Firmer Chisel, ass'd.....	gr 3.00
Socket Framing Chisel, ass'd.....	gr 5.00
J. B. Smith & Co's Pat. File.....	50
File, assorted.....	gr 7.75
Auger, assorted.....	gr 5.00
Auger, large.....	gr 7.00
Pat. Auger, Ives.....	30&10
Pat. Auger, Douglass.....	set \$1.25
Pat. Auger, Swan's.....	set \$1.00
Hoe, Rake, Shovel, &c.....	80&60&10

Hangers—

Barn Door, old patterns.....	70&70&5
Barn Door, New England.....	70&70&5
Samson Steel Anti-Friction.....	55
Orleans Steel.....	55
Hamilton Wrought Steel Track.....	55
Champion.....	60&10
Climax Anti-Friction.....	55
Zenith for Wood Track.....	55
Sterling.....	60&10&60
Victor, No. 1, \$15.00; No. 2, \$16.50; No. 3, \$18.00.....	50&22
Kidder's.....	50&60&10
Boss.....	60&10&60&10&5
Best Anti-Friction.....	60&10&60&10&5
Duplex (Wood Track).....	60&10&5
Terry's Modern.....	50&10&50&10&5
Terry's Ideal.....	50&10&50&10&5
Terry's Solid.....	50&10&60
Terry's Shield.....	50&10&60
Terry's Wrought Single Strap.....	50&10
Cronk's Patent, Steel Covered.....	50&10
Carrier Steel Anti-Friction.....	50&10
Richards.....	30&30&10
Lane's New Standard.....	50&50&25
Lane's Standard.....	50&50&60&10
Lane's Parlor.....	40
Warner's Pat.....	20&10&10
Stearns' Anti-Friction.....	20&10&10
Stearns' Challenge.....	25&10&10
Cincinnati, Nos. 1, \$2.25; 3, \$2.50; 4, \$2.50.....	
Paragon, Nos. 5, 7 and 8.....	20&10
Crecent.....	60&60&10
Nickel, Steel, Nos. 0, \$25; 1, \$20; 2, \$15.....	
Chicago Anti-Friction.....	40&10&60
Star.....	40&10&40&10&5
Barry.....	50
Interstate.....	50&10&60
Pendulum, Payson's.....	40&40&10
Woodruff.....	45
Economy, \$5.00.....	50&10
Perfection.....	50&10&50&10&5

Harness Snaps—See Snaps.**Hatchets—**

American Axe and Tool Co.....	
Blood's.....	
Hunt's.....	
Hurd's.....	
Mann's.....	
Peck's.....	
Underhill's.....	40 & 10
Buffalo Hammer Co.....	50&25
Fayette R. Plumb.....	
C. Hammond & Son.....	
Kelly's.....	
Sargent's & Co.....	
P. S. & W. Co.....	
Ten Eyck Edge Tool Co.....	
Collins.....	10
Schultz, Lohoff & Co.....	50&25

Hay and Straw Knives—

See Knives.

Hinges—**Blind Hinges—**

Parker.....	75&22
Huffer.....	80
Niagara.....	80
Clark's, Nos. 1, 3, 5, 40 and 50.....	80&80&5
Clark's Mortise Gravity.....	50
Sargent's, Nos. 1, 3, 5, 11, 12, 13, 75&10	
Reading's Gravity.....	75&10&75&10&5
Shepard's.....	
Noiseless.....	75&10
Clark's Genuine Pattern.....	80
O. S. Lull & Porter.....	75&10
Acme, Lull & Porter.....	75
Queen City Reversible.....	70&10&50&75
Clark's, Lull & Porter, Nos. 0, 1, 1 1/2, 2, 2 1/2, 3.....	75&10&22
North's Automatic Blind Fixtures, No. 2, for Wood, \$9.00; No. 3, for Brick, \$11.50.....	

Gate Hinges—

Western.....	4 doz \$4.20, 60&60&10
N. E. Reversible.....	4 doz, \$5.60, 60&60&10
Clark's, Nos. 1, 2, 3.....	60&10&25
N. Y. State.....	4 doz \$4.90, 60&60&10
Automatic.....	4 doz \$12.50, 50
Shepard's.....	60&10&25

Spring Hinges—

Geer's Spring and Blank Butts.....	40
Union Spring Hinge Co's list.....	
March, 1888.....	20
Barker's Double Acting.....	25
Union Mfg. Co.....	25
Bommer's.....	30
Buckman's.....	15&20
Chicago.....	30
Bardsley's Patent Checking.....	15
Acme.....	30
U. S.....	25&10
Empire and Crown.....	20
Hero and Monarch.....	55
American, Gem and Star.....	20
Oxford.....	20
Royal.....	60
Reliable.....	15
Champion.....	60
No. 10 Matchless.....	60
No. 25 Unbreakable.....	60
J. G. C. Covered, 4 gro, \$30.....	50&5
Samson.....	60&60
Wiles, No. 1, 4 gro, \$16; No. 2, \$13.....	
Devore, No. 1.....	4 gro, \$13.00
Rex.....	4 gro, \$13.00
Freeport.....	4 gro, \$12.00
New Idea Nos. 1 and 10.....	4 gross \$13.00
Ideal No. 3.....	4 gross \$13.00
Stearns' Noiseless Floor Hinge, 4 set.....	50.00

Wrought Iron Hinges—

List February 14, 1891.....	
Strap and T.....	50&10&50&10&5
Corrugated Strap and T.....	50&10&50&10&5
Screw Hook and Eye.....	14 to 20 in. 3 doz, \$1.00
Strap.....	22 to 36 in. 3 doz, \$1.00
Screw Hook and Eye.....	14 in. 3 doz, \$1.00
16 in. 3 doz, \$1.00	
18 in. 3 doz, \$1.00	
20 in. 3 doz, \$1.00	
22 in. 3 doz, \$1.00	
24 in. 3 doz, \$1.00	
26 in. 3 doz, \$1.00	
28 in. 3 doz, \$1.00	
30 in. 3 doz, \$1.00	
32 in. 3 doz, \$1.00	
34 in. 3 doz, \$1.00	
36 in. 3 doz, \$1.00	
38 in. 3 doz, \$1.00	
40 in. 3 doz, \$1.00	
42 in. 3 doz, \$1.00	
44 in. 3 doz, \$1.00	
46 in. 3 doz, \$1.00	
48 in. 3 doz, \$1.00	
50 in. 3 doz, \$1.00	
52 in. 3 doz, \$1.00	
54 in. 3 doz, \$1.00	
56 in. 3 doz, \$1.00	
58 in. 3 doz, \$1.00	
60 in. 3 doz, \$1.00	
62 in. 3 doz, \$1.00	
64 in. 3 doz, \$1.00	
66 in. 3 doz, \$1.00	
68 in. 3 doz, \$1.00	
70 in. 3 doz, \$1.00	
72 in. 3 doz, \$1.00	
74 in. 3 doz, \$1.00	
76 in. 3 doz, \$1.00	
78 in. 3 doz, \$1.00	
80 in. 3 doz, \$1.00	
82 in. 3 doz, \$1.00	
84 in. 3 doz, \$1.00	
86 in. 3 doz, \$1.00	
88 in. 3 doz, \$1.00	
90 in. 3 doz, \$1.00	
92 in. 3 doz, \$1.00	
94 in. 3 doz, \$1.00	
96 in. 3 doz, \$1.00	
98 in. 3 doz, \$1.00	
100 in. 3 doz, \$1.00	

Hoes—

D. & H. Scovill.....	20
Lane's Crescent, Platters' Pattern.....	45&5
Lane's Razor Blade, Scovill Pattern.....	30
Maynard, S. & O. Pat.....	45&5
Sandusky Tool Co., S. & O. Pat.....	70&70
Am. Axe and Tool Co., S. & O. Pat.....	5
Pat.....	5
Chattanooga Tool Co., S. & O. Pat.....	60&80
Grub.....	60&10

Handled—

Garden, Mortar, &c.....	70&70&5&25
Planter's, Cotton, &c.....	70&70&5&25
Warren Hoe.....	60&60&5
Magic.....	40 doz \$4.00

Hog Rings and Ringers—

See Rings and Ringers—

Holisting Apparatus—

See Machines, Hoisting.

Hollow-Ware—

See Ware, Hollow.

Holders—

Bag—	
Sprengle's Pat.....	4 doz \$18.00
Bit—	
Extension.....	
Barber's.....	4 doz \$15.00, 40&40&10
Ives.....	4 doz \$20.00, 60&50&60&10
Diagonal.....	4 doz \$24.00, 40
Angular.....	4 doz \$24.00, 40&5
File and Tool—	
Balz Pat.....	4 doz \$4.00, 25
Nicholson File Holders.....	20
Sash—	
Motley's Adj. Sash, Medium Size.....	40

Hooks—**Cast Iron—****Knife Sharpeners—****Knives—****Butcher, Shoe, &c.****Wilson's Butcher Knives, list Dec 8, 1890.....****Ames' Butcher Knives.....****Foster Bros' Butcher, &c.....****Jordan's A. A. Butchers', list.....****Nichols' Butcher Knives.....****Ames' Shoe Knives.....****Ames' Bread Knives, 4 doz \$1.50, 15&20****Moran's Shoe and Bread.....****Hay and Straw—See Hay Knives.****Table and Pocket—See Cutlery.****Clothes Line, Reading list.....****Ceiling, Sargent's list.....****Harness, Reading list.....****Coat and Hat, Sargent's list.....****Coat and Hat, Reading.....****Wrought Iron—****Cotton.....****Cotton Pat. (N. Y. Mallet and Handle) Wks.....****Tassel and Picture, T. & S. Mfg. Co.....****Wrought Staples, Hooks, &c.....****Wire—****Wire Coat and Hat, Gem, list April, 1888.....****Wire Coat and Hat, Miles, list April, 1888.....****Indestructible Coat and Hat.....****Wire Coat and Hat, Standard.....****Handy Hat and Coat.....****Steady Ceiling Hooks.....****Belt.....****Atlas, Coat and Hat.....****Williamson's Bird Cage Hooks, list April, 1892.....****Bright Wire Goods—See Wire.****Miscellaneous—****Grass, No. 2, \$2.00; No. 3, \$2.10; No. 4, \$2.25****Noll's Grass.....****Bush.....****Whiffletree—Patent.....****Hooks and Eyes—Malleable Iron.....****Hooks and Eyes—Brass.....****Flash Hooks, American.....****Bench Hooks—See Bench Stops****Horse Nails—See Nails, Horse****Horse Shoes—****See Shoes, Horse.****Hose, Rubber—****Competition.....****Standard.....****Extra.....****N. Y. B. & P. Co., Para.....****N. Y. B. & P. Co., Extra.....****N. Y. B. & P. Co., Dundee.....****Huskers—****Blair's Adjustable.....****Blair's Adjustable Clipper.....****Hubbard's Solid Steel.....****Indurated Fiber Ware—****See Ware, Indurated Fiber.****Irons.****Sad—****From 4 to 10, at factory.....****Self-Heating.....****Self-Heating.....****Enterprise Irons, list Jan. 17, 1892.....****Enterprise Star Irons, list Jan. 17, '92.....****Crown.....****Ideal Irons, new list.....****Salamanca Irons.....****B. B. Sad Irons.....****Chinese Laundry (N.E. Butt Co.).....****New England.....****Mahony's Troy Pol. Irons.....****Sensible, list Jan. 91.....****Sensible Tailor's Irons.....****National Self-Heating.....****Soldering—**

Brittan, Graham & Mathes, list Jan. 1899.
 Flat, 100, 60x10x10 1/2
 Barnes Mfg. Co. 40x40x10 1/2
 Yale, 100, net prices
 Delta Flat Key, 36 1/2
 Bomer's Night Latches, 15 1/2
 Brooklyn Latches, 50x10 1/2
 Warner's Burglar Proof, 1/2 doz. \$8.00, 50%

Padlocks—

List June 10, 1891. 50x2 1/2
 Norwich Lock Mfg. Co., old list. 50x2 1/2
 Yale Lock Mfg. Co.'s, net prices
 Eagle, 40x2 1/2
 Bomer's, Nos. 0 to 91. 80x
 Bomer's Scandinavian, &c., Nos. 100 to 506. 15x
 A. E. Deltz. 40x
 Champion Padlocks. 30x
 Hotchkiss. 60x
 Star. 1/2 doz \$9.50, 50x10 1/2
 Barnes Mfg. Co. 40x40x10 1/2
 Nock's. 30x
 Scandinavian. 90x40 1/2
 E. T. Fram's Keystone Scandinavian, Nos. 119, 120, 130 and 140. 90x10 1/2
 Other Nos. 65x
 Ames Sword Co. up to No. 150. 40x
 Ames Sword Co. above No. 150. 50x
 Slaymaker, Barry & Co. 90x5 1/2
 No. 41 line. 50x5 1/2
 No. 61 line. 60x5 1/2
 No. 21 line. 75x10 1/2

Sash, &c.—

Clark's No. 1, \$10; No. 2, \$8 1/2 gr. 33 1/2
 Ferguson's. 33 1/2
 Victor. 60x10x2 1/2
 Walker's. 10x
 Attwell Mfg. Co. 25x33 1/2
 Reading. 60x10x6 1/2
 Hammond's Window Springs. 40x
 Common Sense, Jap'd, Cop'd and Br'd. gr \$4.00
 Common Sense, Nickel Plated. gr \$10.00
 Universal. 60x
 Kempshall's Gravity. 60x60x10 1/2
 Corbin's Daisy, list Feb. 15, 1888. 70x
 Payson's Perfect. 60x10x10 1/2
 Huginn's Sash Balances. 25x5 1/2
 Huginn's New Sash Locks. 25x5 1/2
 Ives Patent. 60x10x5 1/2
 Fish (Liesche's pat.), No. 100, gr \$3. 10x
 No. 105, gr \$10. 50x
 Davis, Bronze, Barnes Mfg. Co. 60x
 Champion Safety list January, 1893. 70x5 1/2
 Security. 70x
 Giant, list Jan., 1892. 70x5 1/2
 Wolcott's. 60x10x5 1/2
 Monarch. 50x

Lumber Tools—

See Tools, Lumber.

Lustro—

Four-ounce bottles. 1/2 doz, \$1.75; 1/2 gross. \$17.00

Machines.

Boring—

Without Augers. Upright. Angular.
 Douglas. \$5.60 \$8.75. 50x
 Snell's, Rice's Pat. 6.50 6.75 40x10 1/2
 Jennings. 6.50 6.75 45x10 1/2
 Other Machines. 2.35 2.75. 50x
 Phillips' Patent with Augur. 7.00 7.50. 25x
 Miller's Falls. 7.50. 25x

Fluting—

Knox, 4 1/2-inch Rolls. \$3.25 each } 35x
 Knox, 6-inch Rolls. \$3.60 each }
 Eagle, 3 1/2-inch Rolls. \$2.15. 35x
 Eagle, 5 1/2-inch Rolls. \$2.85. 35x
 Crown, 4 1/2 in. \$3.50; 6 in. \$4.00; 8 in. \$4.50 each. 35x
 Crown Jewel, 6 in. \$3.50 each, 35x
 American, 5 in. \$3.00; 6 in. \$3.40; 7 in. \$4.50 each. 35x
 Domestic Fluter. 1.50 each. 15x
 Geneva Hand Fluter, White Metal. 1/2 doz \$12, 25x
 Crown Hand Fluter, Nos. 1, \$15.00; 2, \$12.50; 3, \$10.00; 4, \$9.25. 30x
 Shepard Hand Fluter, No. 85, per doz \$15.60. 40x
 Shepard Hand Fluter, No. 110, 1/2 doz \$11.00. 40x
 Shepard Hand Fluter No. 95, 1/2 doz \$8.00. 40x
 Combined Fluter and Sad Iron. 1/2 doz \$15.00. 30x

Hoisting—

Moore's Hand Hoist, with Lock Brake. 20x
 Moore's Differential Pulley Block. 40x
 Eureka's Mfg. Co.'s. 25x
 Sure Grip Steel Tackle Blocks. 25x

Washing—

Anthony Wayne, 1/2 doz. No. 1, \$42; No. 2, \$30; No. 3, \$42.
 Wayne American. 1/2 doz \$38.00
 Western Star 1/2 doz. No. 2, \$36; No. 3 \$39.
 Wetall. 1/2 doz \$54.00
 Fair and Square. 1/2 doz \$42.00

Mallets—

Hickory. 20x10x20x10 1/2
 Ligumum 20x10x20x10 1/2
 B. & L. Block Co., Hickory & L. V. 80x30x10 1/2

Mattocks—Regular list.

60x10x60x10 1/2

Measures—

Standard Fiberware, No. 1, peck: 1/2 dozen, \$3.50; 1/2 peck, \$3.00.

Meat Cutters—

See Cutters, Meat.

Menders, Harness—

Per doz. \$2.00

Milk Cans—See Cans, Milk.

Mills—Coffee—

Box and Slide, list Jan. 1, 1888. 60x80x10 1/2
 Net prices are often made which are lower than above discount.
 American, Enterprise Mfg. Co., list Jan. 17, 1893. 20x
 The Swift, Lane Bros. 30x

Mining Knives—

See Knives, Mining.

Molasses Gates—

See Gates, Molasses.

Money Drawers—

See Drawers, Money.

Mowers, Lawn—

Best Machines: 10-in. \$4; 12-in. \$4.50; 14-in. \$5; 16 in. \$5.50; 18-in. \$6
 Low-Grade Machines: 10-in. \$3; 12-in. \$3.25 14-in. \$3.50 each

Muzzles—

Safety. 1/2 doz, \$3.00, 25x

Nails—

Cut and Wire. See Trade Report.
 Wire Nails, Papered.
 Association list, May 1, 192. 80x10x10 1/2
 Tack Mfrs. list. 70x5 1/2
 Hungarian, Finishing, Upholsterers', &c. See Tacks.

Horse—

Nos. 6 7 8 9 10
 American. 3 1/2 3 3/4 3 1/2 3 1/2 3 1/2 net
 Ausable. 28 1/2 28 1/2 25 1/2 24 1/2 23 1/2
 Clinton, Fin. 19 1/2 17 1/2 16 1/2 15 1/2 14 1/2 40x10x2 1/2
 Essex. 28 1/2 28 1/2 25 1/2 24 1/2 23 1/2 30x10 1/2
 Lyra. 19 1/2 17 1/2 16 1/2 15 1/2 14 1/2 40x10 1/2
 Snowden. 19 1/2 17 1/2 16 1/2 15 1/2 14 1/2 40x10 1/2
 Vulcan. 23 1/2 21 1/2 20 1/2 19 1/2 18 1/2 25x
 Northwest. 25 1/2 23 1/2 22 1/2 21 1/2 20 1/2 25x25x5 1/2
 A. C. 25 1/2 23 1/2 22 1/2 21 1/2 20 1/2 25x10x3 1/2 1/2 5x
 C. B. K. 25 1/2 23 1/2 22 1/2 21 1/2 20 1/2 33 1/2x33 1/2x10 1/2
 Maud S. 25 1/2 23 1/2 22 1/2 21 1/2 20 1/2 40x10x5 1/2
 Champlain. 28 1/2 26 1/2 25 1/2 24 1/2 23 1/2 40x5x5 1/2 2x
 Saranac. 23 1/2 21 1/2 20 1/2 19 1/2 18 1/2 40x5 1/2
 Champion. 25 1/2 23 1/2 22 1/2 21 1/2 20 1/2 10x10x10 1/2
 Capewell. 19 1/2 18 1/2 17 1/2 16 1/2 15 1/2 35x
 Anchor. 23 1/2 21 1/2 20 1/2 19 1/2 18 1/2 50x
 Western. 23 1/2 21 1/2 20 1/2 19 1/2 18 1/2 50x
 Empire Bronzed. 13 1/2 14 1/2 15 1/2

Picture—

Brass Head, Sargent's list. 60x60x10 1/2
 Brass Head, Combination list. 50x10 1/2
 Porcelain Head, Sargent's list. 50x10x10 1/2
 Porcelain Head, Combination list. 40x10 1/2
 Niles' Patent. 40x

Nail Pullers—See Pullers, Nail.

Nail Sets—See Sets, Nail.

Nut Crackers—

See Crackers, Nut.

Nuts—List Dec. 18, 1889.

Square. Hex.
 Hot Pressed. 5.80x 6.50x off list
 Cold Punched. 5.00x 6.10x off list
 In packages of 100 lb, add 1-10¢ lb, net; in packages less than 100 lb, add 1/4¢ lb, net.

Oakum—

Best or Government. 1/2 lb 6¢ 7/4¢
 U. S. Navy. 1/2 lb 5¢ 9/4¢
 Navy. 1/2 lb 6¢ 5/4¢

Oil Tanks—See Tanks, Oil.

Oilers—

Zinc and Tin. 65x10x70x5 1/2
 Brass and Copper. 50x10x50x10 1/2
 Malleable, Hammers' Improved, No. 1, \$3.60; No. 2, \$4.00; No. 3, \$4.40 10x10x5 1/2
 Malleable, Hammers' Old Pattern, same list. 45x
 Prior's Pat. or "Paragon" Zinc. 60x10x10 1/2
 Prior's Pat. or "Paragon" Brass. 50x
 Olmstead's Tin and Zinc. 60x
 Olmstead's Brass and Copper. 50x
 Engstrom's Zinc. 60x
 Broughton's Brass. 50x
 Steel, Draper & Williams. 50x

Openers, Can—

Messenger's Comet. 1/2 doz \$3.00, 25x
 American. 1/2 gross \$2.75x\$3.00
 Duplex. 1/2 doz 25¢, 15x20x
 Lyman's. 1/2 doz \$3.75, 20x
 No. 4, French. 1/2 doz \$2.25, 55x60x
 No. 5, Iron Handle. 1/2 gr \$6.00, 45x60x
 Eureka. 1/2 doz \$2.50, 10x
 Sardine Scissors. 1/2 doz \$2.75x\$3.00
 Star. 1/2 doz \$2.75
 Sprague, No. 1, \$2.00; 2, \$2.25; 3, \$2.50;
 Excelsior, No. 1 \$2.50; No. 2, \$1.50. 40x70x
 World's Best 1/2 gross, No. 1, \$12.00;
 No. 2, \$24.00; No. 3, \$36.00. 50x10 1/2
 Universal, 1/2 doz \$3.00. 55x65x
 Domestic, 1/2 doz \$2.00. 45x
 Champion, 1/2 doz \$2.00. 50x

Packing, Steam—

Rubber—

Standard. 70x70x10 1/2
 Extra. 60x60x5 1/2
 N. Y. B. & P. Co., Standard. 50x
 N. Y. B. & P. Co., Empire. 60x
 N. Y. B. & P. Co., Salamander. 25x
 Jenkins' Standard, 1/2 doz \$25x25x5 1/2

Miscellaneous—

American Packing. 10x11 1/2 1/2
 Russian Packing. 14 1/2 1/2
 Italian Packing. 18 1/2 1/2
 Cotton Packing. 15 1/2 1/2
 Jute. 17 1/2 1/2

Pails—

S. S. & Co.: 18-qt., \$7.00; 20-qt., \$7.25 per doz. 5 1/2

Galvanized—

Quarts 10 12 14
 Hill's Light Weight, 1/2 doz. \$2.75 3.00 3.25
 Hill's Heavy Weight, 1/2 doz. 3.00 3.25 3.75
 Helwig's. 2.50 2.75 3.00
 Sidney Shepard & Co. 2.35 2.85 3.05
 Iron Chad. 2.50 2.75 3.00
 Fire Buckets. 2.75 3.25 3.50
 Buckets—See Well Buckets

Indurated Fiber Ware—25x

Star Pails, 12 qt. 1/2 doz \$4.20
 Milk, 14 qt. 1/2 doz \$5.40
 Stable, 14 qt. 1/2 doz \$6.00
 Fire Pails, deep. 1/2 doz \$4.80
 Fire Pails, round bottom. 1/2 doz \$5.40

Standard Fiber Ware—

Water Pails, 12 qt., 1/2 doz. \$3.60 \$4.00
 Dairy Pails, 14 qt., 1/2 doz. 4.00 4.50
 Fire Pails, No. 1, 12 qt., 1/2 doz 4.00
 Fire Pails, No. 2, 14 qt., 1/2 doz 4.50
 Sugar Pails. 5.50 6.00
 Fire Pails. 4.50
 Buggy Pails. 3.50
 Slop Jars (bal. trap). 7.50 8.50
 Chamber Pails, 14 qt. 6.00 7.00

Pans—

Dripping— 1/2 doz 5 1/2
 Large sizes. 1/2 doz 5 1/2
 Silver & Co. (Covered). 40x

Fry—

Standard List:
 No. 1. 1 2 3 4
 1/2 doz. \$3.50 \$3.75 \$4.25 4.75 \$5.25
 No. 2. 5 6
 1/2 doz. \$6.00 \$7.00 \$8.00 \$9.00
 Polished, regular goods. 75x75x10 1/2
 Acme Fry Pans. 60x60x

Dust—

Steel Edge, No. 1. 1/2 doz \$1.75

Roasting and Baking—

Columbia, S. S. & Co.: Nos. 10, \$2; 20, \$2.25; 30, \$2.50 each. 50x

Paper and Cloth—

Sand and Emery—
 List April 19, 1888. 50x10x50x10 1/2 5x
 Sibley's Emery and Crocus Cloth. 30x

Parers—

Apple—
 Advance. 1/2 doz \$4.75
 Baldwin. 1/2 doz 5.25
 Bonanza. 1/2 doz 5.00
 Daisy. 1/2 doz 4.00
 Dandy. 1/2 doz 4.50
 Eclipse. 1/2 doz 4.25
 Eureka, 1888. 1/2 doz 16.00
 Family Bay State. 1/2 doz 12.00
 Favorite. 1/2 doz 5.00
 Gold Medal. 1/2 doz 4.00
 Ideal. 1/2 doz 4.00
 Little Star. 1/2 doz 4.50
 Monarch. 1/2 doz 13.50
 New Lightning. 1/2 doz 5.50
 Oriole. 1/2 doz 4.00
 Penn. 1/2 doz 4.00
 Perfection. 1/2 doz 4.00
 Pomona. 1/2 doz 4.00
 Rocking Table. 1/2 doz 6.00
 Turn Table. 1/2 doz 4.50
 Victor. 1/2 doz 13.50
 Waverly. 1/2 doz 4.00
 White Mountain. 1/2 doz 4.00
 72. 1/2 doz 4.25
 78. 1/2 doz 7.00

Potato—

White Mountain. 1/2 doz \$4.50
 Active Combination. 1/2 doz \$5.50
 Hoosier. 1/2 doz \$13.50
 Saratoga. 1/2 doz \$5.50

Pencils—

Faber's Carpenters'. high list 50x
 Faber's Round Gilt. 1/2 doz \$5.25
 Dixon's Lead. 1/2 doz \$4.50
 Dixon's Lumber. 1/2 doz \$6.75
 Dixon's Carpenters'. 10x

Picks—

Railroad or Adze Eye, 5 to 6, \$12.00; 6 to 7, \$13.00. 60x10x60x10 1/2

Picture Nails—

See Nails, Picture.

Pinking Irons—

See Irons, Pinking.

Pins—

Bow—
 Humason, Beckley & Co.'s. 60x10x
 Sargent & Co.'s. 117 and 118. 80x10
 Peck, Stow & W. Co.'s. 50x10x50x10 1/2 5x
 Silvered Glass. net
 White Enamel. net

Escutcheon—

Iron, list Nov. 11, 1885. 50x10x50x10 1/2 5x
 Brass. 60x60x5 1/2

Pipe, Wrought Iron—

List October 12, 1892.
 1 1/2 and under, Plain. 60x10 1/2
 1 1/2 and under, Galv. 52 1/2x10 1/2
 1 1/2 and over, Plain. 70x10 1/2
 1 1/2 and over, Galv. 60x10 1/2
 Boiler Tubes, list Oct. 24, 1892. 65x10 1/2
 Casing, list Nov. 10, 1892. 52 1/2x10 1/2
 Inserted joints Casing, list Nov. 10, 1892. 47 1/2x5 1/2
 Standard Tube. 27 1/2x5 1/2
 Cold Drawn Seamless Steel Tubing. 50x

Planes and Plane Irons—

Wood Planes—
 Molding. 40x40x10 1/2
 Bench, First quality. 45x45x10 1/2
 Bench, Second quality. 50x50x10 1/2
 Bailey's (Stanley R. & L. Co.) 50x10 1/2

Iron Planes—

Bailey's (Stanley R. & L. Co.) 50x10 1/2
 Miscellaneous Planes (Stanley R. & L. Co.) 25x10 1/2
 Steers' Iron Planes. 50x50x5 1/2
 Meriden Mal. Iron Co.'s. 50x50x5 1/2
 Davis' Iron Planes. 50x50x5 1/2
 Birmingham Plane Co. 60x60x5 1/2
 Gage Tool Co.'s Self-Setting. 20x10x10 1/2
 Chaplin's Iron Planes. 50x50x5 1/2
 Sargent's. 60x60x5 1/2
 Standard Tool Co. 60x50x5 1/2

Plane Irons—

Butcher's. \$5.00x\$5.25 to 5 1/2
 Buck Bros. 90x
 Auburn Thistle. 30x10 1/2
 Ohio. 30x10 1/2
 Sandusky. 35x
 L. & I. J. White. 50x10 1/2
 Stanley R. & L. Co. 50x10 1/2

Plates—

Felloe. 1/2 doz \$4.00x\$4.50

Pliers and Nippers—

Button's Patent. 60x
 Hall's No. 2, 5 in., \$13.50; No. 4, 7 in., \$21.00 1/2 doz. 40x
 Humason & Beckley Mfg. Co. 50x50x5 1/2
 Lindsay's Giant. 35x
 Gas Pliers. 60x
 Gas Pliers, Custar's Nickel Plated. 60x5 1/2
 Eureka Pliers and Nippers. 40x
 Russell's Parallel. 25x
 P. S. & W. Cast Steel. 50x
 Add 6¢, W. Timmers' Cutting Nippers. 10x
 Carew's Pat. Wire Cutters. 30x
 Morrill's Parallel, 1/2 doz, \$12.00. 30x5 1/2
 Cronk's 5 in., \$15.00; 10 in., \$21.00. 50x50x5 1/2
 Cronk's Button Pattern. 50x10x60x
 Cronk's Carrier Pliers. 60x60x5 1/2

Plumbs and Levels—

Regular List. 75x10x75x10 1/2 5x
 Stanley's Duplex. 20x10 1/2
 Stanley's Handy. 20x10 1/2
 Diston's. 50x
 Cook's. 40x10 1/2
 Pocket Levels. 70x10x70x10 1/2 10x
 Davis Iron Levels. 40x10 1/2

Poachers, Egg—

Buffalo Steam Egg Poachers, 1/2 doz. No. 1, \$6.00; No. 2, \$9.00. 35x
 Silver & Co., G-Ring, 1/2 doz, \$4.00. 30x
 Ring. 32.00

Pokes, Animal—

Bishop's I. X. L. 1/2 doz \$6.00
 Bishop's O. K. 1/2 doz \$5.25
 Bishop's Pioneer. 1/2 doz \$5.75
 Bishop's American. 1/2 doz \$5.75
 Eagle, Double Stale. 1/2 doz \$5.75
 Eagle, Single Stale. 1/2 doz \$5.75
 Buckeye, Single Stale. 1/2 doz \$5.75
 Bolding. 1/2 doz \$5.00
 Metallic Horse Poke. 1/2 doz, \$6.00

Police Goods—

R. I. Tool Co., Handcuffs, \$15.00 1/2 doz 1

Presses—**Fruit and Jelly—**

Enterprise Mfg. Co.	25¢
Heinrich's Quality City	50¢ doz \$3.60
Shepard's Co.	40¢ doz \$2.75
Oliver & Co.	40¢ doz \$2.75

Pruning Hooks and Shears—See Shears.**Pullers Nail—**

Scraper, 1/2 doz.	\$18.00, 38¢ doz
Curie Hammer	50¢ doz, \$9.00
Giant No. 1	50¢ doz, \$18.00, 10¢
Giant No. 2	50¢ doz, \$15.00, 10¢
Pelican	50¢ doz, \$9.00, 25¢
Polypse	Each, \$2.00, net
Economy	50¢ doz, \$6.00

Pulleys—

Hot House, Awning, & Co.	60¢ doz, 70¢
Japanned Screw	60¢ doz, 10¢
Japanned Side	60¢ doz, 10¢
Japanned Clothes Line	60¢ doz, 10¢
Moore's Sash, Anti-Friction	50¢
Hay Fork, Solid Eye, 4.00; Swivel, 4.50	50¢ doz, 50¢ doz, 10¢
Hay Fork, "Anti-Friction," 5 in. solid, 55.70	50¢ doz, 50¢ doz, 10¢
Hay Fork, "P" Common and Patent, Pushed	20¢
Hay Fork, Tarbox Pat. Iron	20¢
Hay Fork, Reed's Self-Lubricating	60¢
Shade Rack	45¢
Tackle Blocks—See Blocks	
Moore's Anti-Friction 5 in. Wheel, 40¢	50¢ doz, 50¢ doz, 10¢
Shepard's Niagara No. 25, 1/2 doz 23¢ net	50¢ doz, 50¢ doz, 10¢
Sash (Auger Mortise)	50¢
Common Sense	60¢
Empire	60¢
Ideal, Nos. 2, 4, 10 & 15, 70¢ less 1¢	50¢ doz, 50¢ doz, 10¢
Acme	50¢ doz, 50¢ doz, 10¢
Star	50¢ doz, 50¢ doz, 10¢
On bbl. lots extra 5%	
Ideal, Nos. 25 and 55	50¢ doz, 22¢ net

Pumps—

Cistern, Best Makers	60¢ doz, 60¢ doz, 10¢
Pitcher Spout, Best Makers	60¢ doz, 60¢ doz, 10¢
Pitcher Spout, Cheaper G'ds	75¢ doz, 75¢ doz, 10¢

Punches—

Saddler's or Drive, good	50¢ doz, 60¢ doz, 10¢
Bemis & Call Co.'s Cast Steel Drive	50¢ doz, 60¢ doz, 10¢
Bemis & Call Co.'s Springfield Socket	50¢ doz, 60¢ doz, 10¢
Spring, good quality	50¢ doz, 60¢ doz, 10¢
Spring, Leach's Pat.	50¢ doz, 60¢ doz, 10¢
Bemis & Call Co.'s Spring and Check	40¢
Solid Timbers, P., S. & W. Co., 40¢	50¢ doz, 60¢ doz, 10¢
Timbers' Hollow Punches, P., S. & W. Co.	20¢ doz, 20¢ doz, 10¢
Rice Hand Punches	15¢
Avery's Revolving	40¢
Avery's Sawset and Punch—See Sawsets	

Rail—

Sliding Door, Wrt Brass	50¢ doz, 50¢ doz, 10¢
Sliding Door, Bronzed Wrt Iron	50¢ doz, 50¢ doz, 10¢
Sliding Door, Iron, Painted	50¢ doz, 50¢ doz, 10¢
Barn Door, Light, In. 4, 5, 6	50¢ doz, 50¢ doz, 10¢
Per 100 feet	\$2.00 2.50 3.10, 10¢
B. D. for N. E. Hangers	Small, Med. Large
Per 100 feet	\$3.15 2.70 3.25 Net
Terry's Steel Rail	50¢ doz, 50¢ doz, 10¢
Victor Track Rail, 7¢ per foot	50¢ doz, 50¢ doz, 10¢
Carrier, double braced, Steel Rail, 7¢ per foot	50¢ doz, 50¢ doz, 10¢
Moore's Wrought Iron	50¢ doz, 50¢ doz, 10¢
Moody Steel Rail	50¢ doz, 50¢ doz, 10¢

Rakes—

Cast Steel, Association g'ds, 70¢ doz, 70¢ doz, 10¢	50¢ doz, 50¢ doz, 10¢
Cast Steel, outside g'ds, 70¢ doz, 70¢ doz, 10¢	50¢ doz, 50¢ doz, 10¢
Gibbs' Lawn Rake	50¢ doz, 50¢ doz, 10¢
Gibbs' Canton Lawn Rake	50¢ doz, 50¢ doz, 10¢
Gibbs' Acme Lawn Rake	50¢ doz, 50¢ doz, 10¢
Gibbs' Favorite Lawn Rake	50¢ doz, 50¢ doz, 10¢
Gibbs' Crown Lawn Rake, No. 1	50¢ doz, 50¢ doz, 10¢
Oneda Lawn Rake	50¢ doz, 50¢ doz, 10¢
Port Madison Prize Bow Brace and Peerless	50¢ doz, 50¢ doz, 10¢
Port Madison Steel Tooth Lawn Rake	50¢ doz, 50¢ doz, 10¢

Razors—

J. R. Torrey Razor Co.	20¢
Wostenholme and Butcher, \$10 to £	10¢
Jordan's AAA, new list	Net
Jordan's Old Faithful, new list	Net
Salvado	50¢ doz, \$15.00
Electric Cutlery Co.	Net
Campbell Cutlery Co.	50¢

Razor Strops—**See Strops, Razor.****Rings and Rings—****Bull Rings—**

Union Nut Co.	55¢
Sargent's	75¢ doz, 10¢
Hotchkiss' low list	30¢
Humason, Beckley & Co.	70¢
Peck, Stow & W. Co.	50¢ doz, 50¢ doz, 10¢
Rich Hdw. Co.	White Metal, low list, 50¢ doz, 50¢ doz, 10¢

Hog—

Top of the Hill Rings	50¢ doz, 50¢ doz, 10¢
Top of the Hill Rings	50¢ doz, 50¢ doz, 10¢
Hill's Improved Rings	50¢ doz, 50¢ doz, 10¢
Hill's Old Style Rings	50¢ doz, 50¢ doz, 10¢
Hill's Tongues	50¢ doz, 50¢ doz, 10¢
Hill's Rings	50¢ doz, 50¢ doz, 10¢
Perfect Rings	50¢ doz, 50¢ doz, 10¢
Perfect Rings	50¢ doz, 50¢ doz, 10¢
Blair's Hog Rings	50¢ doz, 50¢ doz, 10¢
Blair's Hog Rings	50¢ doz, 50¢ doz, 10¢
Champion Rings, Double	50¢ doz, 50¢ doz, 10¢
Brown's Rings	50¢ doz, 50¢ doz, 10¢
Brown's Rings	50¢ doz, 50¢ doz, 10¢
Electric Hog Rings	50¢ doz, 50¢ doz, 10¢
Electric Hog Rings	50¢ doz, 50¢ doz, 10¢
Major Rings	50¢ doz, 50¢ doz, 10¢
Major Rings	50¢ doz, 50¢ doz, 10¢

Rivets and Burrs

Iron, list Nov. 17, '87	60¢ doz, 60¢ doz, 10¢
Copper	60¢ doz, 60¢ doz, 10¢
Coppered Iron, Bettina Brand	40¢

Rivet Sets—See Sets.**Roasting and Baking****Pans—See Pans, Roasting and Baking.****Rods—**

Star, Brass	25¢ doz, 30¢
Star, Black Walnut	50¢ doz, 40¢

Rollers—

Iron Door, Sargent's list	60¢ doz, 10¢
Home Moore's Anti-Friction	55¢
Union Barn Door Roller	70¢
Thompson Mfg. Co.'s Lawn Roller	20¢

Rope—The following prices are f.o.b. New York or factory, and are shaded 1/4¢ on large lots; terms, 1 1/2% for cash.

Manilla, 7-16 in. diam. and larger	9¢
Manilla, 3/4 in. to 10 in.	10¢
Manilla, Tarred Rope	9¢
Manilla, Hay Rope	9¢
Sisal, 7-16 inch and larger	7 1/2¢
Sisal, 3/4 in. to 10 in.	8 1/4¢
Sisal, 1/4 and 5-16 in.	8 1/4¢
Sisal, Hay Rope	7 1/2¢
Sisal, Tarred Rope	7 1/2¢
Sisal, Medium Lath Yarn	7 1/2¢
New Zealand, 7-16 in. & larger	7 1/2¢
New Zealand, 3/4 inch, 7 in.	8 1/4¢
New Zealand, 1/4 and 5-16 inch	8 1/4¢
New Zealand, Hay Rope	7 1/2¢
New Zealand, Tarred Rope	7 1/2¢
Cotton Rope	13 1/4¢
Jute Rope	6 1/2¢

Wire—

List February, 1892. All kinds	45¢
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Rules—

Boxwood	80¢ doz, 10¢
Ivory	50¢ doz, 10¢
Starrett's Steel Rules and Straight Edges	25¢ doz, 10¢

Sad Irons—See Irons, Sad.**Sand and Emery Paper****and Cloth—****See Paper and Cloth.****Sash Cord—See Cord, Sash.****Sash Locks—See Locks, Sash.****Sash Weights—****See Weights, Sash.****Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.****Saws—The following prices are generally cut by jobbers.**

Diston's Circular	45¢ doz, 45¢ doz, 10¢
Diston's Cross Cut	40¢ doz, 40¢ doz, 10¢
Diston's Hand	25¢
Woodrough & McParlin	
Hand, Panel and Rip	30¢ doz, 30¢ doz, 10¢
Narrow Champion Cross Cuts with Handles	18¢ doz, 18¢ doz, 10¢
Champion Thin Back Cross Cuts	26¢ doz, 26¢ doz, 10¢
Champion Extra Thin Back Cross Cuts	29¢ doz, 29¢ doz, 10¢
One Man Champion Cross Cuts	37¢ doz, 37¢ doz, 10¢
Wheeler, Madden & Clemson Mfg. Co.	
Hand, Panel and Rip	35¢ doz, 35¢ doz, 10¢
Narrow Champion Cross Cuts with Handles	18¢ doz, 18¢ doz, 10¢
Champion Thin Back Cross Cuts	26¢ doz, 26¢ doz, 10¢
Champion Extra Thin Back Cross Cuts	29¢ doz, 29¢ doz, 10¢
One Man Champion Cross Cuts	37¢ doz, 37¢ doz, 10¢
Atkins' Circular	50¢
Atkins' Cross Cuts, new list	40¢
Atkins' Mulay, Mill and Drag	40¢
Atkins' One-Man Saw	40¢
Peace Circular and Mill	45¢ doz, 45¢ doz, 10¢
Peace Hand Panel and Rip	45¢ doz, 45¢ doz, 10¢
Peace Cross Cuts	45¢ doz, 45¢ doz, 10¢
Richardson's Circular and Mill	45¢ doz, 45¢ doz, 10¢
Richardson's X Cuts	45¢ doz, 45¢ doz, 10¢
Richardson's Hand, &c.	25¢ doz, 25¢ doz, 10¢
C. E. Jennings & Co.'s brand	25¢

Hack Saws—

Griffin's, complete	40¢ doz, 40¢ doz, 10¢
Griffin's Hack Saw Blades	40¢ doz, 40¢ doz, 10¢
Star Hack Saws and Blades	25¢
Eureka and Crescent	25¢

Scroll—

Lester, complete, \$10.00	25¢
Rogers, complete, \$4.00	25¢
Barnes' Builders' and Cab Makers	\$15.25, 25¢
Barnes' Scroll Saw Blades	35¢

Saw Frames—**See Frames, Saw.****Saw Sets—See Sets, Saw.****Saw Tools—See Tools, Saw.****Scales—**

Hatch, Counter, No. 171, good quality	50¢ doz, 50¢ doz, 10¢
Hatch, Tea, No. 181	50¢ doz, 50¢ doz, 10¢
Union Platform, Plain	\$2.10 doz, 2.20
Union Platform, Striped	\$2.40 doz, 2.50
Chattillon's Grocers' Trip Scales	50¢
Chattillon's Eureka	25¢
Chattillon's Favorite	40¢
Family Turnbills	30¢ doz, 30¢ doz, 10¢
Riehle Bros' Platform	40¢

Scale Beams—**See Beams, Scale.****Scissors, Fluting—45¢****Scrapers—**

Adjustable Box Scraper (S. R. & L. Co.)	50¢ doz, 50¢ doz, 10¢
Box, 1 Hand	50¢ doz, 50¢ doz, 10¢
Box, 2 Hand	50¢ doz, 50¢ doz, 10¢
Defiance Box and Ship	20¢ doz, 20¢ doz, 10¢
Foot	50¢ doz, 50¢ doz, 10¢
Ship, Common	50¢ doz, 50¢ doz, 10¢
Ship, R. I. Tool Co.	10¢

Screen Window and Door**Frames—See Frames****Screw Drivers—****See Drivers, Screw****Screws—****Bench and Hand—**

Bench, Iron	55¢ doz, 55¢ doz, 10¢
Bench, Wood, Beach	50¢ doz, 50¢ doz, 10¢
Bench, Wood, Hickory	20¢ doz, 20¢ doz, 10¢
Hand, Wood	25¢ doz, 25¢ doz, 10¢
Hand, Grand Rapids, list	35¢

Coach, Lag and Hand-Rail—

Lag, Blunt Point, list Jan. 1, 1890	80¢ doz, 80¢ doz, 10¢
Coach and Lag, Gimlet Point, list Jan. 1, 1890	80¢ doz, 80¢ doz, 10¢
Hand Rail, Sargent's	70¢ doz, 70¢ doz, 10¢
Hand Rail, H. & B. Mfg. Co.	70¢ doz, 70¢ doz, 10¢
Hand Rail, Am. Screw Co.	75¢

Jack Screws—

Jack Screws, Millers Falls list	50¢ doz, 50¢ doz, 10¢
Jack Screws, P. S. & W.	35¢
Jack Screws, Sargent	70¢
Jack Screws, Starrett's	40¢ doz, 40¢ doz, 10¢

Cork—

Humason & Beckley Mfg. Co.	40¢ doz, 40¢ doz, 10¢
Williamson's	33¢ doz, 33¢ doz, 10¢
Detroit Cork Screw Co.	33¢

Machine—

Flat Head Iron	65¢
Round Head Iron	60¢

Wood—

List January 1, 1891.	
Flat Head Iron	70¢
Round Head Iron	65¢
Flat Head Brass	70¢
Round Head Brass	65¢
Flat Head Bronze	70¢
Round Head, Bronze	65¢
Rogers' Drive Screws	82¢

Scroll Saws—See Saws, Scroll.**Scythes—**

Grain	40¢ doz, 40¢ doz, 10¢
Grass	40¢ doz, 40¢ doz, 10¢

Scythe Snaths—**See Snaths, Scythe.****Sets—**

Aiken's Sets, Awls and Tools	60¢ doz, 60¢ doz, 10¢
No. 20, 50¢ doz, 10¢	60¢ doz, 60¢ doz, 10¢
Fray's Ad. Tool Hds., Nos. 1, 1 1/2, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50	45¢
Miller's Falls A-J Tool Hds.	25¢
Nos. 1, 1 1/2, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50	25¢
Henry's Combination Haft	50¢ doz, 50¢ doz, 10¢
Stanley's Excelsior	50¢
No. 1, \$7.50; No. 2, \$4.00; No. 3, \$5.50	30¢ doz, 30¢ doz, 10¢
Common Brad Sets	70¢ doz, 70¢ doz, 10¢
No. 42, \$10.50; No. 43, \$12.50	70¢ doz, 70¢ doz, 10¢

Nail—

Square	50¢ doz, 50¢ doz, 10¢
Round	50¢ doz, 50¢ doz, 10¢
Buck Bros	27¢
Cannon's Diamond Point	50¢ doz, 50¢ doz, 10¢

Rivet—

Regular list	70¢
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Saw—

Stillman's Genuine	50¢ doz, 50¢ doz, 10¢
Stillman's Pattern, Hand	50¢ doz, 50¢ doz, 10¢
Cross Cut, \$5.25	55¢
Common Lever	50¢ doz, 50¢ doz, 10¢
Morrill's No. 1	\$14.00
No. 11, \$15.50	50¢
Nos. 3 and 4, Cross Cut, \$22.50	40¢ doz, 40¢ doz, 10¢
No. 5, Mill, \$30.00	40¢ doz, 40¢ doz, 10¢
No. 10, \$15.00	40¢ doz, 40¢ doz, 10¢
Leach's, No. 0, \$8.00; No. 1, \$15.00	15¢ doz, 15¢ doz, 10¢
Nash's	20¢ doz, 20¢ doz, 10¢
Hammer, Hotchkiss	\$5.50, 10¢
Hammer, Bemis & Call Co.'s new	30¢ doz, 30¢ doz, 10¢
Bemis & Call Co.'s Lever and Spring Hammer	30¢ doz, 30¢ doz, 10¢
Bemis & Call Co.'s Plate	10¢
Bemis & Call Co.'s Cross Cut	12¢
Alken's Genuine	\$13.00, 50¢ doz, 50¢ doz, 10¢
Alken's Imitation	\$7.00, 50¢ doz, 50¢ doz, 10¢
Bart's Pat. Lever	20¢
Disston's Star	25¢

Snaps, Harness, &c.

Anchor (T. & S. Mfg. Co.)	65¢
Fitch's (Bristol)	50¢ to 1.00
Kochias	1.00
Andrews	50¢
Sargent's Patent Guarded	70¢ to 1.00
German, new list	40¢ to 1.00
Covert	50¢ to 1.00
Covert, New Patent	50¢ to 1.00
Covert, New R. E.	60¢ to 1.00
Covered Spring	80¢ to 1.00
Covert's Saddle Works' Triumph	39¢
John Protz Snaps	75¢ to 75¢

Snaths. Scythe—

List	50¢ to 50¢
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Soldering Irons—

See Irons, Soldering.

Spittoons, Cuspidors, &c.**Standard Fiberware—**

Cuspidors, 8½ inch, ½ doz., No. 5, 88; No. 5, 89.

Spittoons, Daisy, 8-inch, No. 1, 4; 10 and 11 inch, 86.

Spoke Shaves—

See Shaves, Spoke.

Spoke Trimmers—

See Trimmers, Spoke.

Spoons and Forks—**Tinned Iron—**

Basting, Cen. Stamp, Co.'s list, 70¢ to 10¢

Solid Table and Tea, Cen. Stamp, 70¢ to 10¢

Buffalo, S. S. & Co., 33¢ to 2¢

Silver Plated—

months or 5¢ cash 30 days:

Meriden Brit. Co., Rogers, 40¢ to 15¢

C. Rogers & Bros., 40¢ to 15¢

Bogers & Bros., 40¢ to 15¢

Reed & Barton, 40¢ to 15¢

Wm. Rogers Mfg. Co., 40¢ to 15¢

Simpson, Hall, Miller & Co., 40¢ to 15¢

Holmes & Edwards Silver Co., 40¢ to 15¢

L. Boardman & Son, 50¢ to 12¢

Miscellaneous—

Holmes & Edwards Silver Co., 50¢ to 10¢

No. 67 Mexican Silver, 50¢ to 10¢

No. 30 Silver Metal, 50¢ to 10¢

No. 24 German Silver, 50¢ to 10¢

No. 50 Nickel Silver, 50¢ to 10¢

No. 49 Nickel Silver, 50¢ to 10¢

Wm. Rogers Mfg. Co., 50¢ to 10¢

Rogers' Silver Metal, 50¢ to 10¢

185 Rogers' German Silver, 60¢ to 8¢

225 Rogers' Nickel Silver, 50¢ to 8¢

German Silver, 50¢ to 60¢

German Silver, Hall & Elton, 50¢ to 8¢ cash

Nickel Silver, 50¢ to 8¢ cash

Britannia, 60¢ to 8¢

Boardman's Nickel Silver, list July 1, 1891, 60¢ to 7¢

Boardman's Britannia Spoons, cash lots, 60¢ to 5¢

Spring—**Door—**

Torrey's Rod, 89 in., ½ doz \$1.20 to 1.2

Warner's No. 1, ½ doz \$1.50; No. 2, \$3.40

Gem (Coll), list April 19, 1893, 20¢

Star (Coll), list April 19, 1893, 20¢

Victor (Coll), 60¢ to 1.00

Champion (Coll), 60¢ to 1.00

Cowell's, No. 1, ½ doz \$1.80; No. 2, \$1.50

Rubber, complete, ½ doz \$4.50, 55¢ to 10¢

Pencils, 50¢ to 60¢

Phoenix, 39¢

Carriage, Wagon, &c.

Mapple, Concord, Platform and Half

Roll, 60¢ to 1.00

Cliff's Bolster Springs, 25¢

Squares—

Steel and Iron, 85¢ to 85¢

Nickel Plated, 85¢ to 85¢

Try Square and T Bevels, 60¢ to 1.00

Diston's Try Square and T Bevels, 50¢

Winterbottom's Try and Miter, 30¢ to 1.00

Starrett's Micrometer Caliper Squares, 25¢

Avery's Flush Bevel Squares, 40¢

Avery's Bevel Protractor, 50¢

Squeezers—**Fodder—**

Blair's, ½ doz \$2.00

Blair's "Climax", ½ doz \$1.25

Lemon—

orcealain Lined, No. 1, ½ doz \$6.00

Wood, No. 2, 25¢ to 30¢

Wood, Common, ½ doz \$1.70 to 1.75

Dunlap's Improved, ½ doz \$3.75, 20¢

Sammis, No. 1, 5, 10; No. 2, 9, 12; 18 ½ doz, 25¢ to 1.00

Jennings' Star, ½ doz \$2.50

The Boss, ½ doz \$2.50

Dean's, Nos. 1, ½ doz \$6.50; 2, \$3.35; 3, \$1.90; Queen, \$2.60

Little Giant, 50¢ to 50¢

King, 40¢ to 50¢

Hotchkiss Straight Flash, ½ doz \$12.00

Silver & Co., Glass, ½ doz \$2.00

Standard Fiber Ware—

See Ware, Standard Fiber.

Staples—

Barbed 3/16 in. and larger, ½ doz 7¢ to 7¢

Barbed 1/8 in., ½ doz 8¢ to 8¢

Fence Staples, Galvanized, ½ doz 10¢

Fence Staples, Plain, ½ doz 10¢

Grand Crossing Tack Co.'s list, 75¢ to 1.00

Steelyards**Stocks and Dies—**

Blacksmith's: Waterford Goods, 35¢

Butterfield's Goods, 35¢

Lighting Screw Plate, 25¢ to 30¢

Becker's New Screw Plates, 25¢ to 30¢

Reversible Hatchet, 30¢

Gardner, 25¢ to 30¢

Green River, 25¢ to 30¢

Stops, Bench—

Morrell's, ½ doz, Nos. 1, 99.50; 2, 12.00

tochias, ½ doz \$5, 10¢ to 10¢

Weston's, No. 1, \$10 No. 2, 99, 25¢ to 10¢

McGill's, ½ doz \$3, 10¢

Cincinnati, 25¢ to 10¢

Terrell's Nos. 1 and 2, ½ doz, \$3; No. 3, \$3.60

Stone—

Stones, Grind—See Grindstones.

Scythe Stones—

Pike Mfg. Co., list April, 1892, 39¢

Cleveland Stone Co., list Nov. 1892, 39¢

Oil Stones, &c.—

Pike Mfg. Co.,

Hindostan No. 1, ½ doz, 8¢

Sand Stone, ½ doz, 5¢

Turkey Oil Stone, 4 to 8 in., 40¢ to 40¢

Turkey Slips, 80¢

Washita Stone, Extra, 50¢

Washita Stone, No. 1, 40¢

Washita Stone, No. 2, 30¢

Washita Slips, Extra, 80¢

Washita Slips, No. 1, 70¢

Arkansas Stone, No. 1, 3 to 5 ½ in., \$2.80

Arkansas Stone, No. 1 5 ½ to 8 in., \$3.50

Lake Superior, \$3.50

Lake Superior Slips, ½ doz, 13¢

Stove Polish—

See Polish, Stove.

Stretchers Carpet—

Cast Iron, Steel Points, ½ doz \$2.2

Socket, ½ doz \$1.75

Bullard's, 25¢ to 25¢

Strops, Razor—

Genuine Emerson, 60¢ to 60¢

Imitation, ½ doz \$2.00, 20¢ to 10¢

Torrey's, 20¢

Badger's Belt and Com., ½ doz \$2.00

Lamont Combination, ½ doz \$4.00

Jordan's Pat. Padded, list Nov. 1, '89, 50¢

Electric Cutlery Co., list Nov. 1, '89, 50¢

Campbell Cutlery Co., list Nov. 1, '89, 50¢

Stuffer, Sausage—

Miles' Challenge, ½ doz \$20, 50¢ to 50¢

Perry, ½ doz, No. 1, \$15.00; No. 0, \$21.00

Draw Cut No. 4, each \$30.00, 20¢

Enterprise Mfg. Co., list Jan 17, '93, 25¢

Silver's, 40¢ to 10¢

Sweepers, Carpet and Lawn—**Carpet—**

Bissell No. 5, ½ doz \$17.00

Bissell No. 8, ½ doz \$20.00

Bissell, Grand, ½ doz \$36.00

Standard, ½ doz \$24.00

Domestic, ½ doz \$21.00

Domestic, No. 2, ½ doz \$22.00

Grand Rapids, ½ doz \$24.00

Crown Jewel, No. 1, \$18.00; No. 2, \$19.00

Magic, ½ doz \$15.00

Improved Parlor Queen, ½ doz \$27.00

Nicked, ½ doz \$27.00

Japanned, ½ doz \$24.00

Excelsior, ½ doz \$22.00

Garland, ½ doz \$22.00

Parlor Queen, ½ doz \$22.00

Housewife's Delight, ½ doz \$15.00

Ladies' Friend, ½ doz \$15.00

Ladies' Friend No. 2, ½ doz \$16.00

Advance, ½ doz \$18.00

Our Leader, ½ doz \$19.00

Triumph, ½ doz \$21.00

Crown Jewel, ½ doz \$21.00

Supreme, ½ doz \$22.00

Easy, ½ doz \$22.00

Gilt Edge, ½ doz \$24.00

Acme, ½ doz \$26.00

Imperial, ½ doz \$26.00

Grand Republic, ½ doz \$28.00

The Star, ½ doz \$21.00

Reliable, ½ doz \$22.00

The Rapid, ½ doz \$22.00

Our Own, ½ doz \$27.00

Model, ½ doz \$27.00

Goshen, Sweeper Company, Grand

Rapier, Mich., make the following re-

bates:

5 dozen in 6 months, ½ doz \$1.00

10 dozen in 6 months, ½ doz \$2.00

25 dozen in 6 months, ½ doz \$3.00

Exception L.F., when 10 dozen price is \$13.50, and 25 dozen \$13.00.

Lawn—

Thompson Mfg. Co., 30¢

Swings—

Davies Lawn, 25¢

Tacks, Brads &c.

List October 19, 1892. Old established

straight weights. Short Weight goods

are sold at lower prices.

Carpet Tacks—

American, Blued, 60¢

Steel, Tinned and Cop'd, 70¢

Steel, Bright and Blued, 60¢

Steel, Tinned and Coppered, 70¢

Swedes Iron, Blued, 72¢

Swedes Iron, Tinned, 75¢

American Iron Tacks, Domestic, 60¢

Swedes Iron Tacks—

S. S., Blued, 60¢

S. S., Tinned, 70¢

Lanc., Blued, 55¢

Lanc., Tinned, 60¢

Gimp and Lace Tacks—

S. S., Blued, 62¢

S. S., Tinned, 65¢

Lanc., Blued, 60¢

Lanc., Tinned, 60¢

Basket and Trimmers' Tacks—

Lanc., 52¢

S. S., 60¢

Hungarian Nails, 60¢

Common and Patent Brads, 55¢

Leathered Tacks, S. S., 10¢

Brush Tacks, S. S., 60¢

Looking Glass Tacks, S. S., 35¢

Picture-Frame Points, S. S., 35¢

Finishing Nails, 60¢

Trunk and Clout Nails—

Tinned or Coppered, 62¢

Basket Nails, 60¢

Chair Nails, 52¢

Cigar Box Nails, 45¢

Tin Capped Nails, 50¢

Miscellaneous—

Double Point, 90¢ to 90¢

Wire Carpet Nails, 50¢ to 10¢

Claw Handle Carpet, ½ gross \$4.00

Bonnie Blue, ½ gross \$1.60

Bill Nye Brad Box, 4 00

Parisian Gilt Nails, cartoon, 50

Home Tacks, No. 50, ½ case (12 cartons), \$36.00; No. 100, ½ case (12 cartons), \$72.00

Home Nails, No. 200, ½ case (12 cartons), \$30.00; No. 400, ½ case (12 cartons), \$60.00

Upholsterers' Nails, 50¢ to 10¢

Wire Brads and Nails

Steel-Wire Brads, R. & E. Mfg. Co.'s list, 50¢ to 10¢

See also Nails, Wire.

Tanks, Oil—

Emerald, S. S. & Co.: 30-gal. \$8.75; 60-gal. \$11 each, 50¢ to 10¢

Tapes, Measuring—

American, 40¢ to 40¢

Spring, 40¢

Chesterman's, Regular list, 25¢ to 30¢

Thimble Skeins—See Skeins.**Ties, Bale—Steel.**

Standard Wire, list, 50¢ to 10¢

Tinners' Shears, &c —

See Shears, Tinners' &c.

Tinware—

Stamped, Japanned and Piced, list Jan 20, 1887, 70¢ to 10¢

Tire Benders, Upsetters, &c.—See Benders and Upsetters, Tire.**Tobacco Cutters—**

See Cutters, Tobacco.

Tools—**Coopers'—**

Bradley's, 20¢

Barton's, 20¢ to 20¢

L. & J. White, 20¢

Albion Mfg. Co., 2

Wrought Goods—
Staples, Hooks, &c., list March 17, 1892
85¢10@85¢15

Spirits Turpentine—			
In regular bbls	34	@	..
In machine bbls	35	@	..
Glue—			
Low Grade	8	@	10
Cabinet	12	@	14
Medium White	13	@	15
Extra White	17	@	20
French	17	@	22
English	10	@	15
Irish	19	@	

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APRIL 12, 1893.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

Burnt Iron..... Gross ton 4.

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